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ELEVENTH YEAR.

THE ILLUSTRATED

Annual Register
OF
RURAL AFFAIRS,

FOR

1865.

One Hundred and Thirty Engravings.

ALBANY:

LUTHER TUCKER & SON.

1865.

LOSSING-BARRITT

The Country Gentleman:

A WEEKLY JOURNAL FOR

THE FARM, THE GARDEN AND THE FIRESIDE,

LUTHER TUCKER & SON, Editors and Proprietors, Albany, N. Y.

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- | | |
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THE
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REGISTER OF RURAL AFFAIRS
AND
CULTIVATOR ALMANAC,
FOR THE YEAR 1865,
CONTAINING PRACTICAL
SUGGESTIONS FOR THE FARMER AND HORTICULTURIST,
EMBELLISHED WITH ABOUT
One Hundred and Thirty Beautiful Engravings.

BY J. J. THOMAS,

AUTHOR OF THE "AMERICAN FRUIT CULTURIST," AND "FARM IMPLEMENTS,"
ASSOCIATE EDITOR OF THE "COUNTRY GENTLEMAN" AND "CULTIVATOR."

ALBANY, N. Y.

LUTHER TUCKER & SON.

1865.

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Publishers' Advertisement.

The present Number of the ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS will be found of as much general interest, it is thought, as any in the previous series. The subject of COUNTRY HOMES has again been taken up, after an interval of several years, and a number of attractive and convenient designs are presented. In the Number for 1864, a Calendar of Farm Operations was one of the leading features, and it is followed, in the present issue, by a chapter upon the HORTICULTURAL LABORS OF THE YEAR, rendered as complete and practical as possible for the purposes of the Fruit-grower. The article on PRUNING supplies just the information of which the inexperienced cultivator is most in need, and involves a subject on which there is perhaps more frequent inquiry than in any other one department of Orchard Management. Former articles on the Poultry-Yard and Apiary are now succeeded by chapters upon the TURKEY and the farther management of Bees; and under other heads there are included many concise and seasonable notes for the Farmer and Grazier, as well as the House-keeper and Gardener.

THE ANNUAL REGISTER OF RURAL AFFAIRS, as many into whose hands this Number will come, are already aware, has now been published annually since 1855, appearing shortly before the opening year, and designed to supply, in connection with the usual Calendar Pages of an Almanac, a profusely illustrated and useful variety of contents, upon topics of Rural interest—serving to exemplify, as far as may be practicable, the progress we are making in Agriculture and Horticulture, and to condense, within small compass, as great a number as possible of valuable hints and suggestions for those engaged in farming and fruit-growing, and for persons who contemplate building, or who are already living, where there is a greater or less extent of land to cultivate and adorn. It constitutes almost a library in itself, and for preservation and reference an edition is issued triennially on larger and heavier paper, in bound volumes. On pages v. and vi. an advertisement will be noted of the Three Volumes already published; the Fourth will be ready in December, 1865, to contain the ANNUAL REGISTER for 1864, '65 and '66. A complete set, embracing the Three bound Volumes in Library form, as above, and the ANNUAL REGISTER in paper covers for 1864 and 1865, is now sent postpaid to any address for \$5.00.
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L.P.D.
6-25-11

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THE
CULTIVATOR ALMANAC,
FOR 1865.

ASTRONOMICAL CALCULATIONS IN EQUAL OR CLOCK TIME.

ECLIPSES FOR THE YEAR 1865.

I. A partial eclipse of the Moon April 10th, in the evening, or early in the morning of the 11th, visible. Size $2\frac{1}{2}$ digits, or about one-fifth of the Moon's diameter. See table on next page.

II. A total eclipse of the Sun April 25th, invisible in North America, but visible in most of South America and Africa.

III. A partial eclipse of the Moon October 4th, in the evening, visible. The Moon will rise, on the United States east of the Mississippi river, partially eclipsed, and in the Pacific States it will be invisible. Size $4\frac{1}{3}$ digits, or about one-third of the Moon's diameter. The beginning of the eclipse occurs before the Moon rises, and at all places west of the meridian of Buffalo the middle of the eclipse will occur before the rising of the Moon. See table on next page.

IV. An annular eclipse of the Sun October 19th, in the morning, visible throughout most of the United States as a *partial* eclipse. The track of central eclipse begins near Nesqually, in Washington Territory, on Puget's Sound, and passes southeasterly through Montana, Idaho, Kansas, Southern Missouri, Western Tennessee, and Georgia to Savannah. Along this line the eclipse will be 11 digits in size, and ring-like, the ring being $\frac{1}{2}$ digit wide. See table on next page.

• • •
MORNING AND EVENING STARS.

SATURN will be Morning Star until January 19th; then Evening Star until October 26th; then Morning Star the rest of the year.

MARS will be Evening Star until November 11th, and then Morning Star the rest of the year.

JUPITER will be Morning Star until March 18th, and then Evening Star the rest of the year.

VENUS will be farthest east of the sun, February 25, and will increase in brightness until April 1, being then in the west as Evening Star. Its position in the heavens at that time will be very near and a little west of the Pleiades, or Seven Stars. It next appears as a Morning Star, exhibiting a long slender crescent, which rapidly grows wider and brighter, and on the 13th of June it will again be brightest, being then a short distance southwest of the Seven Stars. It will be at its greatest elongation west of the Sun July 16th. It then passes off towards the superior conjunction, and soon fades.

• • •
EQUINOXES AND SOLSTICES.

D. H. M.

Vernal Equinox, March 20 8 58 mo.
Summer Solstice, June 21 5 38 mo.

D. H. M.

Autumnal Equinox, Sept. 22 7 51 ev.
Winter Solstice, Dec. 21 1 41 ev.

Table of the Solar Eclipse October 19, 1865.

Places.	Begins	Ends.	Digits	Places.	Begins	Ends.	Digits.
H. M.	H. M.			H. M.	H. M.		
Portland, Me.,..	9 18	0 30	6 3½	Cincinnati,	8 1	11 10	9 ¾
Boston,	9 14	0 27	6 7½	Raleigh,	8 25	11 46	10
Quebec,	9 8	0 19	5 3½	Charleston,	8 19	11 41	10 ½
Montreal,	8 57	0 7	6 ½	Madison, Wis.,....	7 39	10 40	9 ¼
Montpelier,	9 6	0 17	6 7½	Springfield, Ill.,....	7 26	10 40	9 ¾
Albany,	9 0	0 11	7 ½	New Orleans,	7 31	10 28	8 ¾
New-Haven,.....	9 4	0 17	7 ½	St. Louis,	7 36	10 40	10 ½
New-York,	8 55	0 12	7 ¾	Lawrence, Kansas,	7 9	10 6	11
Philadelphia,	8 47	0 5	8	Austin, Texas,	6 57	9 48	7 ¾
Rochester,	8 38	11 49 mo.	7 ¾	Mexico,	6 58	9 32	4 ¼
Toronto,	8 29	11 36 mo.	7 ¾	San Francisco,	before	7 32	7 ½
Baltimore,	8 40	11 59 mo.	8 ½	Portland, Oregon, ..	sunri'e	7 42	10 ¼
Washington,	8 37	11 56 mo.	8 ¾	Havana, Cuba,	8 11	11 39	7 ¾
Richmond, Va.,...	8 34	11 55 mo.	9 ½	Buffalo,	8 30	11 40	8
Detroit,	8 9	11 17 mo.	8 ¾	Chicago,	7 47	10 50	9 ¾

A Table of the Eclipses of the Moon April 10 and Oct. 4, 1865.

Principal places	April 10th.		October 4th.		Principal places	April 10th.		Oct. 4.
	Begins eve. 10.	Ends mo. 11.	Middle	End.		Begins eve. 10.	Ends mor. 11, eve. 10.	
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
Halifax, N. S.,	11 31	1 17	6 26	7 27	Pittsburg, Pa..	10 25	0 11 mo.	6 21
Brunswick, Me	11 6	0 52	6 1	7 2	Savannah, Ga.	10 21	0 7 mo.	6 17
Portland, Me..	11 4	0 50	5 59	7 0	St. Augustine,	10 19	0 5 mo.	6 15
Boston, Mass.,	11 1	0 47	5 56	6 57	Detroit, Mich.,	10 13	11 59 ev.	6 9
Quebec, C. E.,	11 0	0 46	5 55	6 56	Cincinnati, O.,	10 8	11 54 ev.	6 4
Concord, N.H.	10 59	0 45	5 54	6 55	Louisville, Ky.,	10 3	11 49 ev.	5 59
Hartford, Ct.	10 54	0 41	5 49	6 50	Indianapolis,..	10 1	11 47 ev.	5 57
New Haven, Ct	10 53	0 39	5 48	6 49	Nashville,.....	9 58	11 44 ev.	5 54
Troy, N. Y....	10 51	0 37	5 46	6 47	Chicago, Ill.,..	9 55	11 41 ev.	5 51
Albany, N. Y..	10 50	0 36	5 45	6 46	Mobile,	9 52	11 38 ev.	5 48
New-York, ...	10 49	0 35	5 44	6 45	Madison, Wis.,	9 47	11 33 ev.	5 43
Trenton, N. J.	10 47	0 33	5 42	6 43	New Orleans,..	9 45	11 31 ev.	5 41
Philadelphia..	10 45	0 31	5 40	6 41	St. Louis, Mo.,	9 44	11 30 ev.	5 40
Baltimore, Md.	10 39	0 25	5 34	6 35	Natchez, Miss.,	9 40	11 26 ev.	5 36
Harrisburgh, .	10 38	0 24	5 33	6 34	Iowa City,	9 38	11 24 ev.	5 34
Washington ..	10 37	0 23	5 32	6 33	Little Rock,....	9 37	11 23 ev.	5 33
Petersburg, Va	10 36	0 22	5 31	6 32	Matamoras, ..	9 14	11 0 ev.	eclipse
Richmond, Va.	10 35	0 21	5 30	6 31	Santa Fe., N.M.	8 41	10 27 ev.	endsbe-
Rochester,....	10 34	0 20	5 25	6 30	Oregon City, ..	7 41	9 27 ev.	fore the
Buffalo, N. Y.	10 30	0 16	6 26	San Francisco,	7 35	9 21 ev.	rising
Toronto, C.W.	10 28	0 14	6 24	Astoria, Oregon	7 30	9 16 ev.	of the
								moon.

THE CYCLES.

The year 1865 is the first after leap-year, and the latter part of the 89th, and beginning of the 90th year of American Independence; the 6,578th of the Julian Period; the 7,373-4th of the Byzantine era; the 5,625-6th of the Jewish era; the 2,618th of Rome; the 2,612th of Nabonassar; the 2,641st of the Olympiads; the 2,177th of the Grecian era of the Seleneidæ; the 1,581st of Diocletian; the 1,282d of Mohammed, which begins 27th of May. Dominical Letter, A; Epact, 3; Golden Number, 4; Solar Cycle, 26; Roman Indiction, 8; Dionysian Period, 194. The Jewish year 5626, begins Sept. 21, 1865.

1ST MONTH.

JANUARY, 1865.

31 DAYS.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.		
		D.	H. M.	H. M.	H. M.	D.	H. M. S.
FIRST QUARTER,.....		4	10 58 mo.	10 46 mo.	10 36 mo.	1	12 4 6
FULL MOON,.....		11	6 16 ev.	6 4 ev.	5 54 ev.	9	12 7 37
THIRD QUARTER,....		19	9 52 ev.	9 40 ev.	9 30 ev.	17	12 10 34
NEW MOON,.....		27	4 46 mo.	4 34 mo.	4 24 mo.	25	12 12 45

DAY OF MONTH.	DAY OF WEEK	Sun's declin. S.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	
1	A	o ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
2	M	22 52 29	7 30	4 39	10 42	2 39	7 25	4 44	10 42	morn	7 19	4 50	10 42	
3	T	22 46 34	7 30	4 40	11 50	3 32	7 25	4 45	11 49	0 18	7 19	4 51	11 48	
4	W	22 40 13	7 30	4 41	morn	4 26	7 25	4 46	morn	1 12	7 19	4 52	morn	
5	T	22 33 24	7 30	4 41	1 0	5 24	7 25	4 46	0 57	2 10	7 19	4 52	0 55	
6	F	22 26 9	7 30	4 42	2 5	6 26	7 25	4 47	2 2	3 12	7 19	4 53	1 59	
7	S	22 18 27	7 30	4 43	3 11	7 30	7 25	4 48	3 7	4 16	7 19	4 54	3 3	
8	A	22 10 19	7 30	4 44	4 13	8 32	7 25	4 49	4 9	5 18	7 19	4 55	4 5	
9	M	22 1 45	7 30	4 45	5 11	9 31	7 25	4 50	5 6	6 17	7 19	4 56	5 2	
10	T	21 52 46	7 29	4 46	6 4	10 23	7 24	4 51	5 59	7 9	7 19	4 57	5 55	
11	W	21 43 20	7 29	4 47	rises.	11 7	7 24	4 52	rises.	7 53	7 18	4 58	rises.	
12	T	21 33 20	7 29	4 48	6 1	11 51	7 24	4 53	6 4	8 37	7 18	4 59	6 6	
13	F	21 23 14	7 28	4 49	7 0	ev. 35	7 23	4 54	7 2	9 21	7 18	5 0	7 4	
14	S	21 12 34	7 28	4 50	7 56	1 13	7 23	4 55	7 57	9 59	7 17	5 1	7 59	
15	A	21 1 29	7 27	4 52	8 54	1 49	7 22	4 57	8 54	10 35	7 17	5 2	8 55	
16	M	20 50 0	7 27	4 53	9 50	2 26	7 22	4 58	9 50	11 12	7 16	5 3	9 50	
17	T	20 38 7	7 26	4 54	10 47	3 6	7 21	4 59	10 46	11 52	7 16	5 4	10 45	
18	W	20 25 51	7 25	4 56	11 45	3 48	7 20	5 1	11 43	ev. 34	7 16	5 6	11 41	
19	T	20 13 11	7 25	4 57	morn	4 35	7 20	5 2	morn	1 21	7 15	5 7	morn	
20	F	20 0 9	7 24	4 58	0 42	5 22	7 19	5 3	0 39	2 8	7 14	5 8	0 36	
21	S	19 46 44	7 23	4 59	1 41	6 21	7 18	5 4	1 37	3 7	7 14	5 9	1 34	
22	A	19 32 58	7 22	5 1	2 40	7 20	7 18	5 5	2 37	4 6	7 13	5 10	2 32	
23	M	19 18 49	7 22	5 2	3 40	8 22	7 17	5 6	3 36	5 8	7 12	5 11	3 31	
24	T	19 4 19	7 21	5 3	4 37	9 22	7 16	5 7	4 32	6 8	7 12	5 12	4 27	
25	W	18 49 28	7 20	5 4	5 30	10 19	7 16	5 8	5 26	7 5	7 11	5 13	5 22	
26	T	18 34 17	7 19	5 5	6 19	11 8	7 15	5 9	6 15	7 54	7 10	5 14	6 11	
27	F	18 18 45	7 19	5 7	sets.	11 58	7 14	5 11	sets.	8 44	7 9	5 15	sets.	
28	S	18 2 54	7 18	5 8	7 11	morn	7 13	5 12	7 12	9 33	7	9 5 16	7 13	
29	A	17 46 43	7 17	5 9	8 25	0 47	7 13	5 13	8 25	10 20	7	8 5 17	8 25	
30	M	17 30 14	7 16	5 11	9 37	1 34	7 12	5 15	9 36	11 5	7	7 5 19	9 36	
31	T	17 13 26	7 15	5 12	10 48	2 19	7 11	5 16	10 46	11 56	7	7 5 20	10 44	

DIVISION OF THE DAY INTO HOURS.—The day began to be divided into hours from the year 293 B. C., when L. Papirius Cursor erected a sun-dial in the temple of Quirinus at Rome. Previous to the invention of water-clocks, 158 B. C., the time was called at Rome by public eriers. The Chinese divided the day into twelve parts of two hours each. The Italians reckon twenty-four hours round, instead of two divisions of twelve hours each, as we do. In England the measurement of time was alike uncertain and difficult; one expedient was by wax candles, 3 inches burning an hour, and 6 wax candles burning 24 hours; these candles were invented by Alfred, clocks and hour-glasses not being then known in England, A. D. 886.

2d MONTH.

FEBRUARY, 1865.

28 DAYS.

MOON'S PHASES.		Boston.		New-York.		Washington		Sun on Merid. or noon mark.		
		D.	H. M.	H. M.	H. M.	H. M.	D.	H. M.	S.	
FIRST QUARTER,.....		2	8 24 ev.	8 12 ev.	8 2 ev.	1	12 13 58			
FULL MOON,.....		10	11 43 mo.	11 31 mo.	11 21 mo.	9	12 14 31			
THIRD QUARTER,.....		18	4 54 ev.	4 42 ev.	4 32 ev.	17	12 14 14			
NEW MOON,.....		25	3 19 ev.	3 7 ev.	2 57 ev.	25	12 13 14			

DAY OF MONTH	DAY OF WEEK	Sun's declens. S.	CALENDAR				CALENDAR				CALENDAR			
			For Boston, New-England, N. York State, Michigan, Wisconsin, Iowa and Oregon.				For N. York City, Philadelphia, Conn., N. Jersey, Penn., Ohio, Indiana and Illinois.				For Washington, Mary'ld, Virg'a, Kent'y, Miss'ri, and California.			
		SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. M. H. M	
1	W	16 56 20	7 14 5 14	11 56	3 10	7 10	5 18	11 54	morn	7 6	5 22	11 51		
2	T	16 38 56	7 12 5 15	morn	4 4	7 9	5 19	morn	0 50	7 5	5 23	morn		
3	F	16 21 15	7 11 5 17	1 3	5 4	7 8	5 20	1 0	1 50	7 4	5 24	0 56		
4	S	16 3 16	7 10 5 18	2 7	6 7	7 7	5 21	2 3	2 53	7 3	5 25	1 59		
5	A	15 45 1	7 9 5 19	3 5	7 10	7 6	5 22	3 1	3 56	7 2	5 26	2 56		
6	M	15 26 31	7 8 5 21	3 58	8 12	7 5	5 24	3 54	4 58	7 1	5 27	3 49		
7	T	15 7 45	7 7 5 22	4 46	9 10	7 4	5 25	4 42	5 56	7 0	5 28	4 38		
8	W	14 48 44	7 6 5 24	5 28	10 11	7 3	5 26	5 24	6 47	6 59	5 29	5 20		
9	T	14 29 27	7 5 5 25	6 5	10 46	7 2	5 28	6 2	7 32	6 58	5 30	5 59		
10	F	14 9 57	7 3 5 26	rises.	11 24	7 0	5 29	rises.	8 10	6 57	5 31	rises.		
11	S	13 50 12	7 2 5 27	6 46	ev. 4	6 59	5 30	6 47	8 50	6 56	5 32	6 47		
12	A	13 30 13	7 1 5 29	7 42	0 41	6 58	5 32	7 42	9 27	6 55	5 34	7 42		
13	M	13 10 1	7 0 5 30	8 39	1 17	6 56	5 33	8 39	10 3	6 54	5 35	8 38		
14	T	12 49 37	6 58 5 31	9 34	1 51	6 55	5 34	9 33	10 37	6 53	5 36	9 31		
15	W	12 29 0	6 57 5 32	10 33	2 28	6 54	5 35	10 31	11 14	6 51	5 37	10 28		
16	T	12 8 11	6 55 5 33	11 30	3 11	6 53	5 36	11 27	11 57	6 50	5 38	11 24		
17	F	11 47 10	6 54 5 34	morn	3 56	6 51	5 37	morn	ev. 42	6 49	5 39	morn		
18	S	11 25 58	6 52 5 36	0 28	4 49	6 50	5 38	0 24	1 35	6 48	5 40	0 20		
19	A	11 4 35	6 51 5 37	1 26	5 47	6 49	5 39	1 22	2 33	6 47	5 41	1 18		
20	M	10 43 2	6 49 5 39	2 21	6 50	6 47	5 41	2 17	3 36	6 45	5 42	2 12		
21	T	10 21 10	6 48 5 40	3 10	7 54	6 46	5 42	3 6	4 40	6 44	5 43	3 1		
22	W	9 59 26	6 47 5 41	4 4	8 57	6 44	5 43	4 0	5 43	6 43	5 44	3 56		
23	T	9 37 24	6 45 5 43	4 51	9 57	6 43	5 45	4 48	6 43	6 42	5 46	4 45		
24	F	9 15 14	6 43 5 44	5 32	10 48	6 41	5 46	5 30	7 35	6 40	5 47	5 27		
25	S	8 52 55	6 42 5 45	sets.	11 35	6 39	5 47	sets.	8 21	6 39	5 48	sets.		
26	A	8 30 28	6 41 5 46	7 12	morn	6 38	5 48	7 12	9 11	6 38	5 49	7 12		
27	M	8 7 54	6 39 5 47	8 27	0 25	6 37	5 49	8 25	9 59	6 36	5 50	8 24		
28	T	7 45 13	6 37 5 48	9 39	1 13	6 36	5 49	9 37	10 44	6 34	5 51	9 35		

DIFFERENCE OF DAYS.—There is a vast difference in the length of days. A *sidereal day* is the real and invariable period of the diurnal rotation of the earth on its axis, and contains 23 hours, 56 minutes, 3-5 seconds, of mean solar time; the *lunar day* is 24 hours, 48 minutes; and the *solar day*, which is the mean apparent time of one revolution of the earth on its axis, is 24 hours.

NAMES OF DAYS OF THE WEEK.—Sunday was called *Dies Solis*, or the Sun's day; Monday, *Dies Lunæ*, or the Moon's day; Tuesday, *Dies Martis*, or Mar's day; Wednesday, *Dies Mercurii*, or Mercury's day; Thursday, *Dies Jovis*, or Jupiter's day; Friday, *Dies Veneris*, or Venus' day; and Saturday, *Dies Saturni*, or Saturn's day. The reason they were named thus, was because they considered each of these deities to preside over the day dedicated to them.

3d MONTH.

M A R C H, 1865.

31 D A Y S.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.
		D.	H. M.	H. M.	D.
FIRST QUARTER,.....	4	7 35 mo.	7 23 mo.	7 13 mo.	1 12 12 30
FULL MOON,.....	12	5 58 mo.	5 46 mo.	5 36 mo.	9 12 11 9
THIRD QUARTER,.....	20	7 52 mo.	7 40 mo.	7 30 mo.	17 12 8 24
NEW MOON,.....	27	0 44 mo.	0 32 mo.	0 22 mo.	25 12 5 58

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. S.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	
1	W	o ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
2	T	7 22 25	6 35	5 50	10 50	1 58	6 35	5 50	10 47	11 35	6 33	5 52	10 44	
3	F	6 59 31	6 33	5 51	11 56	2 49	6 33	5 51	11 53	morn	6 31	5 53	11 49	
4	S	6 36 32	6 32	5 53	morn	3 44	6 32	5 53	morn	0 30	6 30	5 54	morn	
5	A	6 13 27	6 30	5 54	0 58	4 43	6 30	5 54	0 54	1 29	6 29	5 55	0 50	
6	M	5 50 17	6 29	5 55	1 55	5 47	6 29	5 55	1 51	2 33	6 27	5 56	1 46	
7	T	5 27 2	6 27	5 56	2 43	6 49	6 27	5 56	2 38	3 35	6 26	5 57	2 34	
8	W	5 3 43	6 26	5 58	3 28	7 49	6 26	5 58	3 25	4 35	6 25	5 58	3 21	
9	T	4 40 20	6 24	5 59	4 6	8 45	6 24	5 59	4 3	5 31	6 24	5 59	4 0	
10	F	4 16 53	6 23	6 0	4 40	9 34	6 23	6 0	4 38	6 20	6 22	6 0	4 35	
11	S	3 53 24	6 21	6 1	5 13	10 18	6 21	6 1	5 11	7 4	6 20	6 1	5 9	
12	A	3 29 51	6 19	6 2	5 41	10 55	6 19	6 2	5 40	7 41	6 18	6 2	5 39	
13	M	3 6 16	6 17	6 3	rises.	11 28	6 17	6 3	rises.	8 14	6 17	6 3	rises.	
14	T	2 42 39	6 15	6 5	7 29	ev. 8	6 15	6 4	7 27	8 54	6 15	6 4	7 26	
15	W	2 19 1	6 14	6 6	8 26	0 45	6 14	6 5	8 24	9 31	6 14	6 5	8 22	
16	T	1 55 21	6 12	6 7	9 22	1 23	6 12	6 6	9 19	10 9	6 13	6 6	9 16	
17	F	1 31 40	6 10	6 8	10 20	1 58	6 10	6 7	10 17	10 44	6 11	6 7	10 13	
18	S	1 7 58	6 9	6 9	11 16	2 40	6 9	6 8	11 13	11 26	6 10	6 8	11 8	
19	A	0 44 16	6 7	6 10	morn	3 28	6 7	6 9	morn	ev. 14	6 8	6 9	morn	
20	M	0 20 34	6 5	6 11	0 12	4 20	6 5	6 10	0 8	1 6	6 6	6 10	0 3	
21	T	N 3 8	6 3	6 13	1 6	5 18	6 3	6 12	1 2	2 4	6 5	6 11	0 57	
22	W	0 26 49	6 2	6 14	1 54	6 23	6 2	6 13	1 50	3 9	6 3	6 12	1 46	
23	T	0 50 29	6 0	6 15	2 41	7 29	6 0	6 14	2 37	4 15	6 2	6 13	2 34	
24	F	1 14 7	5 59	6 17	3 23	8 31	5 59	6 15	3 20	5 17	6 1	6 14	3 17	
25	S	1 37 44	5 57	6 18	4 2	9 31	5 58	6 16	4 0	6 17	5 59	6 15	3 58	
26	A	2 1 18	5 55	6 19	4 41	10 25	5 56	6 17	4 40	7 11	5 57	6 16	4 39	
27	M	2 24 49	5 53	6 20	5 17	11 12	5 55	6 18	5 17	7 58	5 56	6 17	5 17	
28	T	2 48 17	5 52	6 21	sets.	morn	5 54	6 19	sets.	8 48	5 54	6 18	sets.	
29	W	3 11 42	5 51	6 22	8 26	0 2	5 52	6 20	8 24	9 39	5 53	6 19	8 21	
30	T	3 35 4	5 49	6 23	9 38	0 53	5 51	6 21	9 34	10 24	5 52	6 20	9 31	
31	F	3 58 21	5 47	6 24	10 44	1 38	5 49	6 22	10 40	11 15	5 50	6 21	10 36	
		4 21 34	5 45	6 25	11 44	2 29	5 47	6 23	11 40	morn	5 48	6 22	11 35	

MONTH.—The *calendar* month is a twelfth division of the year. A *solar* month is the time in which the sun passes through a whole sign of the zodiac—it is 30 days, 10 hours, 29 minutes, and 5 seconds. A *lunar* month or the period of one moon, is 29 days, 12 hours, 44 minutes, and 3 seconds. A *civil* month consists of a certain number of days, according to the laws and customs of different countries. In the year there are 12 solar months, and 13 lunar months.

DOG DAYS.—These days commence on the 3d of July, and end on the 11th of August. Dr. Hutton says that common opinion has been accustomed to regard the rising and setting of Sirius, or the "dog star," with

4th MONTH.

A P R I L, 1865.

30 DAYS.

MOON'S PHASES.	Boston.	New-York.	Washington	Sun on Merid. or noon mark.
FIRST QUARTER,.....	D. 2 H. M. 8 35 ev.	H. M. 8 23 ev.	H. M. 8 13 ev.	D. 1 H. M. S. 12 3 50
FULL MOON,.....	10 11 43 ev.	11 31 ev.	11 21 ev.	9 12 1 30
THIRD QUARTER,.....	18 6 36 ev.	6 24 ev.	6 14 ev.	17 11 59 26
NEW MOON,.....	25 9 30 mo.	9 18 mo.	9 8 mo.	25 11 57 49

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. N.	CALENDAR						CALENDAR						CALENDAR					
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. M. H. M.	H. M. H. M.	H. M. H. M.				
1	S	4 44 42	5 43	6 26	morn	3 24	5 45	6 24	morn	0 10	5 46	6 22	morn							
2	A	5 7 44	5 41	6 27	0 38	4 22	5 42	6 25	0 34	1 8	5 44	6 23	0 30							
3	M	5 30 42	5 40	6 28	1 25	5 20	5 41	6 26	1 22	2 6	5 43	6 24	1 17							
4	T	5 53 33	5 38	6 29	2 6	6 20	5 39	6 27	2 3	3 6	5 41	6 25	2 0							
5	W	6 16 18	5 36	6 30	2 42	7 17	5 37	6 28	2 40	4 3	5 39	6 25	2 37							
6	T	6 38 57	5 34	6 31	3 14	8 9	5 35	6 29	3 12	4 55	5 38	6 26	3 10							
7	F	7 11 29	5 32	6 32	3 44	8 59	5 33	6 30	3 43	5 45	5 37	6 27	3 42							
8	S	7 23 54	5 30	6 33	4 11	9 43	5 31	6 31	4 11	6 29	5 35	6 28	4 11							
9	A	7 46 11	5 29	6 34	4 39	10 24	5 30	6 32	4 40	7 10	5 33	6 29	4 40							
10	M	8 8 20	5 27	6 35	rises.	11 0	5 28	6 33	rises.	7 46	5 31	6 30	rises.							
11	T	8 30 21	5 25	6 36	7 16	11 35	5 26	6 34	7 14	8 21	5 29	6 31	7 11							
12	W	8 52 14	5 24	6 37	8 13	ev. 15	5 25	6 35	8 10	9 1	5 28	6 32	8 7							
13	T	9 13 58	5 22	6 38	9 10	0 55	5 24	6 36	9 7	9 41	5 27	6 33	9 3							
14	F	9 35 33	5 21	6 39	10 7	1 35	5 22	6 37	10 3	10 21	5 25	6 34	9 59							
15	S	9 56 58	5 19	6 40	11 0	2 18	5 21	6 38	10 56	11 4	5 24	6 35	10 51							
16	A	10 18 14	5 17	6 41	11 50	3 6	5 20	6 39	11 46	11 52	5 23	6 36	11 42							
17	M	10 39 19	5 16	6 42	morn	3 59	5 18	6 40	morn	ev. 45	5 21	6 37	morn							
18	T	11 0 14	5 15	6 43	0 36	4 57	5 16	6 41	0 33	1 43	5 20	6 38	0 29							
19	W	11 20 58	5 13	6 44	1 19	5 59	5 15	6 42	1 16	2 45	5 19	6 39	1 13							
20	T	11 41 31	5 12	6 46	1 57	6 52	5 13	6 44	1 55	3 48	5 17	6 40	1 53							
21	F	12 1 53	5 10	6 47	2 35	8 4	5 11	6 45	2 34	4 50	5 15	6 41	2 33							
22	S	12 22 3	5 8	6 48	3 11	9 4	5 10	6 46	3 10	5 50	5 14	6 42	3 10							
23	A	12 42 1	5 6	6 49	3 47	10 0	5 9	6 47	3 48	6 46	5 13	6 43	3 49							
24	M	13 1 47	5 4	6 51	4 25	10 52	5 7	6 48	4 27	7 38	5 11	6 44	4 29							
25	T	13 21 18	5 3	6 52	sets.	11 39	5 .6	6 49	sets.	8 25	5 10	6 45	sets.							
26	W	13 40 39	5 2	6 53	8 20	morn	5 5	6 50	8 17	9 18	5 9	6 46	8 13							
27	T	13 59 45	5 1	6 54	9 28	0 32	5 3	6 51	9 24	10 9	5 7	6 47	9 20							
28	F	14 18 37	4 59	6 56	10 26	1 23	5 2	6 52	10 22	10 55	5 6	6 48	10 17							
29	S	14 37 15	4 57	6 57	11 18	2 9	5 1	6 53	11 14	11 48	5 4	6 49	11 10							
30	A	14 55 38	4 56	6 58	morn	3 2	5 0	6 54	11 58	morn	5 3	6 50	11 55							

the sun, as the cause of excessive heat, and of consequent calamities, instead of its being viewed as the sign when such effects might be expected. The star not only varies in its risings in every one year as the latitude varies, but is always later every succeeding year in all latitudes; so that in time the star may, by the same rule, come to be charged with bringing frost and snow.

SINGULAR FACT.—Were the atmosphere at all times of a uniform temperature, there never would be hail, rain, nor snow. The water absorbed by it in evaporation from the sea and the earth's surface would descend in an imperceptible vapor, or cease to be absorbed by the air when it was once fully saturated. The absorbing power of the atmosphere and conse-

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.	
	D.	H. M.	H. M.	H. M.	D.	H. M. S.
FIRST QUARTER,	2	11 20 mo.	11 8 mo.	10 58 mo.	1	11 56 56
FULL MOON,	10	3 39 ev.	3 27 ev.	3 17 ev.	9	11 56 14
THIRD QUARTER,	18	1 56 mo.	1 44 mo.	1 34 mo.	17	11 56 9
NEW MOON,	24	6 6 ev.	5 54 ev.	5 44 ev.	25	11 56 39

DAY OF MONTH.	DAY OF WEEK	Sun's declens. N.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. W. morn
1	M	° ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	morn
2	T	15 31 41	4 53	7 0	0 42	4 48	4 58	6 56	0 39	1 34	5 1	6 53	0 36	
3	W	15 49 19	4 51	7 1	1 15	5 43	4 57	6 57	1 12	2 29	5 0	6 54	1 10	
4	T	16 6 42	4 50	7 2	1 46	6 36	4 56	6 58	1 45	3 22	4 59	6 55	1 44	
5	F	16 23 48	4 49	7 3	2 15	7 29	4 55	6 59	2 14	4 15	4 58	6 56	2 14	
6	S	16 40 38	4 48	7 4	2 43	8 15	4 54	7 0	2 43	5 1	4 57	6 56	2 43	
7	A	16 57 12	4 47	7 5	3 10	9 3	4 53	7 1	3 11	5 49	4 56	6 57	3 12	
8	M	17 13 29	4 46	7 6	3 38	9 47	4 52	7 2	3 40	6 33	4 55	6 58	3 42	
9	T	17 29 28	4 45	7 7	4 9	10 28	4 51	7 3	4 12	7 14	4 54	6 59	4 15	
10	W	17 45 10	4 44	7 8	rises.	11 7	4 50	7 4	rises.	7 53	4 53	7 0	rises.	
11	T	18 0 34	4 43	7 9	8 1	11 49	4 49	7 5	7 57	8 35	4 52	7 1	7 53	
12	F	18 15 40	4 42	7 10	8 57	ev. 33	4 48	7 6	8 53	9 19	4 51	7 2	8 48	
13	S	18 30 28	4 41	7 11	9 48	1 17	4 47	7 7	9 44	10 3	4 50	7 3	9 40	
14	A	18 44 57	4 40	7 12	10 36	2 0	4 45	7 8	10 33	10 46	4 49	7 4	10 28	
15	M	18 59 7	4 39	7 13	11 19	2 48	4 44	7 9	11 15	11 34	4 48	7 5	11 12	
16	T	19 12 58	4 38	7 14	11 56	3 40	4 43	7 10	11 54	ev. 26	4 47	7 6	11 51	
17	W	19 26 30	4 37	7 15	morn	4 36	4 42	7 11	morn	1 22	4 46	7 7	morn	
18	T	19 39 42	4 36	7 16	0 25	5 34	4 41	7 12	0 23	2 20	4 45	7 7	0 21	
19	F	19 52 33	4 35	7 17	1 9	6 36	4 40	7 13	1 8	3 22	4 44	7 8	1 8	
20	S	20 5 5	4 35	7 18	1 44	7 38	4 39	7 14	1 44	4 24	4 44	7 9	1 44	
21	A	20 17 16	4 34	7 19	2 20	8 41	4 38	7 15	2 22	5 27	4 43	7 10	2 23	
22	M	20 29 7	4 33	7 20	2 58	9 39	4 37	7 16	3 0	6 25	4 42	7 10	3 2	
23	T	20 40 36	4 32	7 21	3 40	10 33	4 36	7 17	3 43	7 19	4 42	7 11	3 46	
24	W	20 51 44	4 31	7 22	sets.	11 22	4 35	7 18	sets.	8 8	4 41	7 12	sets.	
25	T	21 2 31	4 30	7 23	8 9	morn	4 35	7 19	8 5	8 59	4 40	7 13	8 0	
26	F	21 12 56	4 29	7 24	9 6	0 13	4 34	7 20	9 2	9 48	4 40	7 14	8 58	
27	S	21 22 59	4 28	7 25	9 54	1 2	4 33	7 21	9 51	10 35	4 39	7 14	9 47	
28	A	21 32 40	4 28	7 26	10 37	1 49	4 33	7 22	10 33	11 20	4 38	7 15	10 30	
29	M	21 41 58	4 27	7 27	11 14	2 34	4 32	7 23	11 11	morn	4 38	7 16	11 9	
30	T	21 50 54	4 26	7 28	11 46	3 23	4 31	7 24	11 44	0 9	4 37	7 16	11 42	
31	W	21 59 27	4 26	7 28	morn	4 10	4 31	7 25	morn	0 56	4 37	7 17	morn	

quently its capacity to retain humidity, is proportionably greater in warm than in cold air. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher the ascent from the earth, the colder does the air become. Hence the perpetual snow on very high mountains in the hottest climate.

ATMOSPHERE.—The fluid or gas which we feel on passing our hand through it, and whose force is visible in a high wind. It is 820 times less dense than water, but its elastic pressure or reaction is equal to 15 pounds to the square inch, which is also the weight or action downward; and it is composed of about one part oxygen, and four parts nitrogen or azote.

6th MONTH.

J U N E , 1 8 6 5 .

30 D A Y S .

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.	
FIRST QUARTER,.....	1	H. M. 3 37 mo.	H. M. 3 25 mo.	H. M. 3 15 mo.	D. 1	H. M. S. 11 57 34
FULL MOON,.....	9	4 57 mo.	4 45 mo.	4 35 mo.	9	11 58 58
THIRD QUARTER,....	16	7 9 mo.	6 57 mo.	6 47 mo.	17	12 0 37
NEW MOON,.....	23	3 14 mo.	3 2 mo.	2 52 mo.	25	12 2 21
FIRST QUARTER,....	30	8 56 ev.	8 44 ev.	8 34 ev.		

DAY OF MONTH.	DAY OF WEEK.	Sun's declin. N.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	
1	T	o , "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
2	F	22 15 25	4 24	7 30	0 45	5 49	4 30	7 25	0 44	2 35	4 36	7 19	0 44	
3	S	22 22 48	4 24	7 30	1 12	6 39	4 30	7 25	1 13	3 25	4 35	7 19	1 13	
4	A	22 29 48	4 23	7 31	1 40	7 31	4 29	7 26	1 42	4 17	4 35	7 20	1 43	
5	M	22 36 26	4 23	7 32	2 10	8 20	4 29	7 27	2 12	5 6	4 35	7 20	2 15	
6	T	22 42 38	4 23	7 33	2 43	9 11	4 28	7 27	2 46	5 57	4 34	7 21	2 49	
7	W	22 48 28	4 22	7 33	3 20	9 58	4 28	7 28	3 24	6 44	4 34	7 21	3 28	
8	T	22 53 53	4 22	7 34	4 3	10 44	4 28	7 28	4 7	7 30	4 34	7 22	4 11	
9	F	22 58 54	4 22	7 35	rises.	11 26	4 28	7 29	rises.	8 12	4 34	7 22	rises.	
10	S	23 3 31	4 22	7 35	8 33	ev. 13	4 28	7 29	8 29	8 59	4 34	7 23	8 25	
11	A	23 7 43	4 22	7 36	9 18	1 0	4 28	7 30	9 14	9 46	4 34	7 24	9 11	
12	M	23 11 31	4 22	7 37	9 59	1 44	4 28	7 30	9 56	10 30	4 34	7 25	9 53	
13	T	23 14 55	4 22	7 37	10 38	2 30	4 28	7 31	10 36	11 16	4 34	7 25	10 34	
14	W	23 17 53	4 22	7 38	11 12	3 21	4 28	7 31	11 11	ev. 7	4 34	7 26	11 10	
15	T	23 20 28	4 22	7 38	11 47	4 12	4 28	7 32	11 47	0 59	4 33	7 27	11 46	
16	F	23 22 37	4 22	7 38	morn	5 11	4 28	7 32	morn	1 57	4 33	7 27	morn	
17	S	23 24 22	4 22	7 39	0 20	6 11	4 28	7 33	0 21	2 57	4 33	7 28	0 22	
18	A	23 25 42	4 22	7 39	0 56	7 16	4 28	7 33	0 58	4 2	4 33	7 28	1 0	
19	M	23 26 38	4 23	7 39	1 35	8 18	4 29	7 34	1 38	5 4	4 33	7 28	1 41	
20	T	23 27 8	4 23	7 39	2 18	9 20	4 29	7 34	2 22	6 6	4 34	7 28	2 25	
21	W	23 27 14	4 23	7 39	2 58	10 18	4 29	7 34	3 2	7 4	4 34	7 28	3 6	
22	T	23 26 55	4 23	7 40	4 1	11 6	4 29	7 34	4 5	7 52	4 34	7 29	4 10	
23	F	23 26 11	4 23	7 40	sets.	11 56	4 29	7 35	sets.	8 42	4 34	7 29	sets.	
24	S	23 25 2	4 24	7 40	8 31	morn	4 30	7 35	8 27	9 29	4 35	7 29	8 24	
25	A	23 23 29	4 24	7 40	9 11	0 43	4 30	7 35	9 8	10 13	4 35	7 29	9 5	
26	M	23 21 31	4 24	7 40	9 45	1 27	4 30	7 35	9 43	10 51	4 35	7 29	9 41	
27	T	23 19 8	4 25	7 40	10 17	2 5	4 30	7 35	10 15	11 36	4 35	7 29	10 14	
28	W	23 16 21	4 25	7 40	10 46	2 48	4 31	7 35	10 46	morn	4 36	7 29	10 45	
29	T	23 13 9	4 25	7 40	11 15	3 31	4 31	7 35	11 15	0 17	4 36	7 29	11 15	
30	F	23 9 33	4 25	7 40	11 42	4 16	4 31	7 35	11 43	1 2	4 36	7 29	11 44	

All space is filled with gas, but the passage of the earth through it, and its rotation at the same time, condenses the rare gas of space into an atmosphere, which at the surface of the earth is such as we find it, but is rarer and rarer as we ascend, till at the height of 45 miles, it no longer reflects light; nor is it capable of keeping clouds in suspension above two or three miles. The energy of the oxygenous part of the atmosphere transferred is the cause of fire, combustion, animal heat and life. In volume the atmosphere consists of 79 parts of azote or nitrogen; of 21 of oxygen; of 1.33 aqueous vapor, and of 0.1 of carbonic acid. In weight, 76.6 of azote; 23.3 of oxygen; 0.83 of aqueous vapor, and 0.15 of carbonic acid gas.

7th MONTH.

JULY, 1865.

31 DAYS.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.
FULL MOON,.....	D. 8	H. M. 3 45 ev.	H. M. 3 33 ev.	H. M. 3 23 ev.	D. 1 H. M. S. 12 3 34
THIRD QUARTER,....	15	11 43 mo.	11 31 mo.	11 21 mo.	9 12 4 55
NEW MOON,.....	22	1 45 ev.	1 33 ev.	1 23 ev.	17 12 5 50
FIRST QUARTER,....	30	2 25 ev.	2 13 ev.	2 3 ev.	25 12 6 13

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. N.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. M. H. M.
1	S	° ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	morn
2	A	23 5 33	4 26	7 40	5 2	4 31	7 35	0 13	2 38	4 37	7 29	0 15	0 15	
3	M	23 1 8	4 26	7 40	5 52	4 32	7 35	0 45	3 31	4 38	7 29	0 48	0 48	
4	T	22 56 20	4 27	7 40	0 43	6 45	4 33	7 34	1 19	4 25	4 38	7 28	1 23	
5	W	22 51 7	4 27	7 39	1 16	7 39	4 33	7 34	2 0	5 22	4 39	7 28	2 5	
6	T	22 45 31	4 28	7 39	1 57	8 36	4 33	7 34	2 46	6 16	4 40	7 28	2 50	
7	F	22 39 31	4 29	7 39	2 42	9 30	4 34	7 34	3 37	7 7	4 40	7 28	3 42	
8	S	22 33 7	4 29	7 39	3 33	10 21	4 34	7 34	3 52	4 41	7 27	rises.		
9	A	22 26 20	4 30	7 38	rises.	11 6	4 35	7 33	7 55	4 42	7 27	7 52		
10	M	22 19 9	4 31	7 38	7 58	11 54	4 36	7 33	8 40	4 42	7 27	8 33		
11	T	22 11 36	4 31	7 38	8 38	ev. 43	4 37	7 33	8 36	9 29	4 42	7 27		
12	W	22 3 39	4 32	7 37	9 14	1 28	4 38	7 32	9 13	10 14	4 43	7 26	9 12	
13	T	21 55 20	4 33	7 37	9 49	2 12	4 39	7 32	9 49	10 58	4 44	7 26	9 48	
14	F	21 46 38	4 34	7 36	10 25	3 1	4 39	7 31	10 26	11 47	4 45	7 25	10 26	
15	S	21 28 8	4 36	7 35	11 47	4 50	4 41	7 30	11 50	1 36	4 46	7 24	11 42	
16	A	21 18 19	4 37	7 34	morn	5 51	4 42	7 29	morn	2 37	4 47	7 24	morn	
17	M	21 8 9	4 38	7 34	0 18	6 58	4 43	7 29	0 21	3 44	4 48	7 23	0 24	
18	T	20 57 37	4 39	7 33	1 3	7 2	4 43	7 28	1 6	4 48	4 49	7 23	1 11	
19	W	20 46 45	4 39	7 32	1 53	8 5	4 44	7 27	1 57	5 51	4 50	7 22	2 1	
20	T	20 35 31	4 40	7 32	2 47	9 1	4 45	7 27	2 51	6 47	4 50	7 22	2 56	
21	F	20 23 56	4 41	7 31	3 55	10 51	4 46	7 26	3 59	7 37	4 51	7 21	4 3	
22	S	20 12 0	4 42	7 30	sets.	11 33	4 47	7 25	sets.	8 19	4 52	7 20	sets.	
23	A	19 49 45	4 43	7 29	7 44	morn	4 48	7 24	7 41	9 4	4 53	7 19	7 39	
24	M	19 47 9	4 44	7 28	8 18	0 18	4 49	7 23	8 16	9 44	4 53	7 18	8 14	
25	T	19 34 14	4 45	7 27	8 48	0 58	4 49	7 22	8 47	10 22	4 54	7 17	8 46	
26	W	19 20 59	4 46	7 26	9 16	1 36	4 50	7 22	9 16	10 58	4 55	7 16	9 16	
27	T	19 7 25	4 47	7 25	9 44	2 12	4 51	7 21	9 45	11 38	4 56	7 15	9 46	
28	F	18 53 32	4 48	7 24	10 13	2 52	4 52	7 20	10 15	morn	4 56	7 14	10 16	
29	S	18 39 21	4 49	7 23	10 42	3 34	4 53	7 19	10 44	0 20	4 57	7 14	10 47	
30	A	18 24 51	4 50	7 22	11 15	4 19	4 54	7 18	11 18	1 5	4 58	7 14	11 21	
31	M	18 10 3	4 51	7 21	11 52	5 9	4 55	7 17	11 56	1 55	4 59	7 13	12 0	

FROST AND SNOW.—Occasionally in Lapland the phenomenon of the formation of snow is witnessed when the door of an apartment in which persons are assembled is suddenly opened and a blast of cold air admitted, the watery vapor exhaled by their respiration being instantly frozen into flakes. Snow is a bad conductor of heat, or cold, and therefore acts as a most valuable covering for vegetables and seeds; wheat continues to grow beneath its covering, though every blade would be cut off if exposed to the frosty air. Let us not forget how beautiful and varied are the forms of its flakes, when looked at through a magnifying glass, or microscope.

8th MONTH.

AUGUST, 1865.

31 DAYS.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.		
	D.	H. M.	H. M.	H. M.	D.	H. M.	S.
FULL MOON,	7	0 45 mo.	0 33 mo.	0 23 mo.	1	12	6 1
THIRD QUARTER,	13	4 58 ev.	4 46 ev.	4 36 ev.	9	12	5 12
NEW MOON,	21	2 33 mo.	2 21 mo.	2 11 mo.	17	12	3 41
FIRST QUARTER,	29	7 2 mo.	6 50 mo.	6 40 mo.	25	12	1 49

DAY OF MONTH.	DAY OF WEEK	Sun's declens. N.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. W. Morn
1	T	○ ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	morn
2	W	17 54 57	4 52	7 20	morn	6 4	4 56	7 16	morn	2 50	5 0	7 12	7 11	0 43
3	T	17 39 34	4 53	7 19	0 35	7 2	4 57	7 15	0 39	3 48	5 1	7 10	1 31	
4	F	17 23 54	4 54	7 18	1 23	8 2	4 58	7 14	1 27	4 48	5 2	7 9	2 25	
5	S	17 7 57	4 55	7 16	2 17	9 2	4 59	7 13	2 21	5 48	5 2	7 8	3 24	
6	A	16 51 43	4 56	7 15	3 17	9 57	5 0	7 12	3 20	6 43	5 3	7 8	3 24	
7	M	16 35 12	4 57	7 14	rises.	10 49	5 1	7 11	rises.	7 35	5 4	7 7	rises.	
8	T	16 18 26	4 58	7 13	7 14	11 33	5 2	7 10	7 12	8 19	5 5	7 6	7 10	
9	W	16 1 24	4 59	7 11	7 51	ev. 24	5 3	7 9	7 50	9 10	5 6	7 4	7 49	
10	T	15 44 6	5 0	7 10	8 25	1 10	5 4	7 8	8 25	9 56	5 7	7 3	8 26	
11	F	15 26 33	5 1	7 9	9 8	1 53	5 5	7 6	9 4	10 39	5 8	7 1	9 15	
12	S	15 8 46	5 2	7 8	9 40	2 41	5 6	7 5	9 42	11 27	5 9	7 0	9 44	
13	A	14 50 43	5 3	7 7	10 19	3 35	5 7	7 3	10 22	ev. 21	5 10	6 59	10 25	
14	M	14 32 26	5 4	7 5	11 2	4 33	5 8	7 2	11 6	1 19	5 11	6 58	11 10	
15	T	14 13 56	5 5	7 4	11 52	5 34	5 9	7 0	11 56	2 20	5 12	6 57	12 0	
16	W	13 55 11	5 6	7 2	morn	6 42	5 10	6 59	morn	3 28	5 13	6 55	morn	
17	T	13 36 14	5 7	7 1	0 43	7 45	5 11	6 58	0 57	4 31	5 14	6 54	0 51	
18	F	13 17 3	5 8	7 0	1 39	8 48	5 12	6 57	1 44	5 34	5 15	6 53	1 47	
19	S	12 57 39	5 9	6 58	2 37	9 42	5 13	6 55	2 41	6 28	5 16	6 52	2 45	
20	A	12 38 4	5 10	6 56	3 37	10 29	5 14	6 54	3 40	7 15	5 17	6 50	3 43	
21	M	12 18 16	5 11	6 55	4 36	11 9	5 15	6 53	4 38	7 55	5 18	6 49	4 41	
22	T	11 58 16	5 12	6 54	sets.	11 48	5 16	6 51	sets.	8 34	5 19	6 48	sets.	
23	W	11 38 5	5 14	6 52	7 17	morn	5 17	6 50	7 17	9 14	5 20	6 46	7 17	
24	T	11 17 43	5 15	6 51	7 47	0 28	5 18	6 49	7 47	9 50	5 21	6 45	7 48	
25	F	10 57 11	5 16	6 49	8 16	1 4	5 19	6 47	8 18	10 25	5 21	6 43	8 19	
26	S	10 36 27	5 17	6 48	8 45	1 39	5 20	6 45	8 47	11 2	5 22	6 42	8 49	
27	A	10 15 34	5 18	6 46	9 18	2 16	5 21	6 43	9 20	11 43	5 23	6 41	9 23	
28	M	9 54 31	5 19	6 44	9 51	2 57	5 22	6 41	9 55	morn	5 24	6 39	9 58	
29	T	9 33 19	5 20	6 42	10 30	3 42	5 23	6 40	10 34	0 28	5 25	6 38	10 38	
30	W	9 11 58	5 21	6 41	11 14	4 33	5 24	6 38	11 18	1 19	5 26	6 36	11 22	
31	T	8 28 50	5 22	6 39	morn	5 28	5 25	6 36	morn	2 14	5 27	6 34	morn	

WHIRLWINDS sometimes arise from winds blowing among lofty and precipitous mountains, the form of which influences their direction, and occasions gusts to descend with a spiral or whirling motion. They are frequently, however, caused by two winds meeting each other at an angle, and then turning upon a center. When two winds thus encounter one another, any cloud which happens to be between them is of course condensed, and turned rapidly around; and all substances sufficiently light are carried up into the air by the whirling motion which ensues. The action of a whirlwind at sea occasions the curious phenomenon called a water-spout.

9th MONTH.

SEPTEMBER, 1865.

30 DAYS.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.	
	D.	H. M.	H. M.	H. M.	D.	H. M. S.
FULL MOON,.....	5	9 8 mo.	8 56 mo.	8 46 mo.	1	11 59 45
THIRD QUARTER,....	11	0 14 mo.	0 2 mo.	11 52 ev.	9	11 57 5
NEW MOON,.....	19	6 1 ev.	5 49 ev.	5 39 ev.	17	11 54 17
FIRST QUARTER,....	27	10 2 ev.	9 50 ev.	9 40 ev.	25	11 51 31

DAY OF MONTH	DAY OF WEEK	Sun's declin.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	H. W. M
1	F	8 7 3	5 24	6 36	1 1	7 31	5 27	6 33	1 4	4 17	5 29	6 31	1 9	
2	S	7 45 9	5 26	6 35	2 3	8 33	5 28	6 32	2 6	5 19	5 30	6 30	2 10	
3	A	7 23 7	5 27	6 33	3 9	9 32	5 29	6 30	3 11	6 18	5 31	6 28	3 14	
4	M	7 0 58	5 28	6 31	4 18	10 25	5 30	6 29	4 20	7 11	5 32	6 27	4 22	
5	T	6 38 42	5 29	6 30	rises.	11 11	5 31	6 27	rises.	7 57	5 33	6 25	rises.	
6	W	6 16 19	5 30	6 28	6 59	12 0	5 32	6 26	7 0	8 46	5 34	6 24	7 1	
7	T	5 53 50	5 31	6 26	7 36	ev. 49	5 33	6 24	7 38	9 35	5 35	6 23	7 40	
8	F	5 31 16	5 32	6 25	8 18	1 32	5 34	6 23	8 21	10 18	5 35	6 21	8 24	
9	S	5 8 35	5 33	6 23	9 1	2 24	5 35	6 21	9 5	11 10	5 36	6 20	9 8	
10	A	4 45 50	5 34	6 21	9 50	3 18	5 36	6 19	9 53	ev. 4	5 37	6 18	9 58	
11	M	4 22 59	5 35	6 19	10 40	4 17	5 36	6 18	10 32	1 3	5 38	6 17	10 48	
12	T	3 59 64	5 36	6 17	11 36	5 18	5 37	6 16	11 40	2 4	5 39	6 15	11 45	
13	W	3 37 4	5 37	6 16	morn	6 24	5 38	6 14	morn	3 10	5 40	6 13	morn	
14	T	3 14 0	5 38	6 14	0 33	7 26	5 39	6 12	0 37	4 12	5 40	6 12	0 41	
15	F	2 50 53	5 39	6 12	1 31	8 23	5 40	6 10	1 34	5 9	5 41	6 10	1 37	
16	S	2 27 42	5 40	6 11	2 31	9 16	5 41	6 8	2 33	6 2	5 42	6 9	2 36	
17	A	2 4 28	5 41	6 9	3 13	10 1	5 42	6 7	3 17	6 47	5 43	6 7	3 21	
18	M	1 41 12	5 42	6 7	4 26	10 42	5 43	6 5	4 27	7 28	5 44	6 5	4 28	
19	T	1 17 53	5 43	6 5	5 24	11 18	5 44	6 4	5 24	8 4	5 44	6 4	5 24	
20	W	0 54 32	5 44	6 4	sets.	11 55	5 45	6 2	sets.	8 41	5 45	6 2	sets.	
21	T	0 31 10	5 45	6 2	6 47	morn	5 46	6 1	6 49	9 20	5 46	6 1	6 51	
22	F	0 7 47	5 46	6 0	7 18	0 34	5 47	5 59	7 21	9 56	5 47	5 59	7 23	
23	S	S. 15 38	5 47	5 58	7 51	1 10	5 48	5 57	7 54	10 33	5 48	5 57	7 57	
24	A	'0 39 2	5 48	5 56	8 28	1 47	5 49	5 55	8 32	11 12	5 49	5 55	8 36	
25	M	1 2 27	5 49	5 54	9 10	2 26	5 50	5 53	9 14	11 58	5 50	5 53	9 18	
26	T	1 25 52	5 50	5 52	9 56	3 12	5 51	5 52	10 0	morn	5 51	5 52	10 4	
27	W	1 49 16	5 51	5 50	10 48	4 2	5 52	5 50	10 52	0 48	5 52	5 51	10 56	
28	T	2 12 39	5 53	5 49	11 46	4 57	5 53	5 49	11 50	1 43	5 53	5 49	11 54	
29	F	2 36 1	5 54	5 46	morn	5 57	5 54	5 47	morn	2 43	5 54	5 47	morn	
30	S	2 59 22	5 55	5 45	0 49	7 1	5 55	5 45	0 52	3 47	5 55	5 45	0 55	

HURRICANES--Have been supposed to be of electric origin. A large vacuum is suddenly created in the atmosphere, into which the surrounding air rushes with immense rapidity, sometimes from opposite points of the compass, spreading the most frightful devastation along its track, rooting up trees, and levelling houses with the ground. They are seldom experienced beyond the tropics, or nearer the equator than the 9th or 10th parallels of latitude; and they rage with the greatest fury near the tropics, in the vicinity of land or islands, while far out in the open ocean they rarely occur. They are most common among the West India Islands, near the east coast of Madagascar, in the islands of Mauritius and Bourbon, in the Bay of Bengal, at the changing of the monsoons, and on the coast of China.

10th MONTH.

O C T O B E R, 1865.

31 D A Y S.

MOON'S PHASES.		Boston.	New-York.	Washington	Sun on Merid. or noon mark.
		D.	H. M.	H. M.	D.
FULL MOON,.....	4	4 5 47 ev.	5 35 ev.	5 25 ev.	1 11 49 32
THIRD QUARTER,....	11	10 38 mo.	10 26 mo.	10 16 mo.	9 11 47 11
NEW MOON,.....	19	11 43 mo.	11 31 mo.	11 21 mo.	17 11 45 20
FIRST QUARTER,....	27	11 6 mo.	10 54 mo.	10 44 mo.	25 11 44 8

DAY OF MONTH.	DAY OF WEEK.	Sun's declens.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.	
1	A	o ' "	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	H M	
2	M	3 22 40	5 56	5 43	1 55	8 3	5 56	5 43	1 57	4 49	5 56	5 44	2 0	
3	T	3 45 56	5 57	5 42	3 5	9 3	5 57	5 42	3 6	5 49	5 57	5 42	3 7	
4	W	4 9 10	5 58	5 40	4 17	9 59	5 58	5 41	4 17	6 45	5 58	5 41	4 18	
5	T	4 32 21	5 59	5 39	rises.	10 50	5 59	5 39	rises.	7 36	5 59	5 39	rises.	
6	F	4 55 28	6 1	5 38	6 9	11 36	6 0	5 37	6 12	8 22	6 0	5 38	6 14	
7	S	5 18 32	6 2	5 36	6 53	ev. 29	6 1	5 36	6 56	9 15	6 1	5 37	6 59	
8	A	5 41 31	6 3	5 34	7 40	1 19	6 2	5 34	7 44	10 5	6 2	5 35	7 47	
9	M	6 4 27	6 4	5 33	8 33	2 6	6 3	5 33	8 38	10 52	6 3	5 34	8 42	
10	T	6 27 17	6 5	5 31	9 28	3 2	6 4	5 31	9 32	11 48	6 4	5 32	9 36	
11	W	6 50 3	6 6	5 29	10 25	3 59	6 5	5 29	10 29	ev. 45	6 5	5 31	10 34	
12	T	7 12 43	6 8	5 28	11 25	4 58	6 6	5 28	11 28	1 44	6 6	5 30	11 32	
13	F	7 35 17	6 9	5 26	morn	5 57	6 7	5 26	morn	2 43	6 7	5 29	morn	
14	S	7 57 45	6 10	5 24	0 24	6 57	6 8	5 25	0 27	3 43	6 8	5 27	0 30	
15	A	8 20 7	6 11	5 22	1 23	7 51	6 9	5 23	1 25	4 37	6 9	5 25	1 27	
16	M	8 42 22	6 12	5 20	2 20	8 42	6 10	5 22	2 21	5 28	6 10	5 24	2 23	
17	T	9 4 29	6 13	5 19	3 17	9 25	6 11	5 20	3 18	6 11	6 11	5 22	3 19	
18	W	9 26 29	6 14	5 17	4 13	10 9	6 12	5 19	4 13	6 55	6 12	5 20	4 13	
19	T	9 48 20	6 15	5 16	5 9	10 48	6 13	5 17	5 8	7 34	6 13	5 19	5 7	
20	F	10 10 3	6 17	5 14	sets.	11 23	6 14	5 16	sets.	8 9	6 14	5 17	sets.	
21	S	10 31 37	6 18	5 13	5 53	morn	6 15	5 15	5 56	8 49	6 15	5 16	5 59	
22	A	10 53 1	6 19	5 11	6 28	0 3	6 16	5 13	6 32	9 28	6 16	5 15	6 35	
23	M	11 14 16	6 21	5 10	7 10	0 42	6 18	5 12	7 13	10 9	6 17	5 14	7 18	
24	T	11 35 21	6 22	5 8	7 53	1 23	6 19	5 10	7 57	10 47	6 18	5 13	8 1	
25	F	11 56 15	6 23	5 7	8 43	2 1	6 20	5 8	8 47	11 33	6 19	5 12	8 51	
26	S	12 16 58	6 24	5 5	9 38	2 47	6 21	5 7	9 42	morn	6 20	5 10	9 46	
27	A	12 37 29	6 25	5 4	10 37	3 37	6 22	5 5	10 41	0 23	6 21	5 9	10 44	
28	M	12 57 49	6 27	5 2	11 40	4 31	6 24	5 4	11 42	1 17	6 22	5 7	11 45	
29	T	13 17 57	6 28	5 1	morn	5 29	6 25	5 3	morn	2 15	6 23	5 5	morn	
30	F	13 37 52	6 29	5 0	0 45	6 29	6 26	5 2	0 47	3 15	6 24	5 4	0 48	
31	S	13 57 33	6 31	4 58	1 53	7 32	6 27	5 0	1 54	4 18	6 25	5 3	1 55	
	T	14 17 2	6 32	4 57	3 4	8 33	6 28	4 59	3 4	5 19	6 26	5 2	3 3	

CHANGE OF AIR.—Change of air is at all times one of the most important auxiliaries of the medical adviser. To persons confined in close towns, accustomed to sedentary employments, and suffering from the ailments incidental to such situations, and modes of life, a change to some open hilly district, or the breezy sea-side, often produces marvellous results; so with the poor invalid, attacked, perchance, by consumption, who finds the fresh breezes of the hills or the sea-shore too keen for the diseased lungs to breathe, for such, in some sheltered vale in the Floridas, and other Southern portions of our land, relief and enjoyment may be often found. In the low-lying, thickly-wooded rural districts the air is generally relax-

11th MONTH.

NOVEMBER, 1865.

30 DAYS.

MOON'S PHASES.		Boston.		New-York.		Washington		Sun on Merid. or noon mark.	
		D.	H. M.	H. M.	H. M.	H. M.	D.	H. M. S.	
FULL MOON,.....		3	3 19 mo.	3 7 mo.	5 57 mo.	1 11 43 42			
THIRD QUARTER,....	10	1	1 mo.	0 49 mo.	0 39 mo.	9 11 44 0			
NEW MOON,.....	18	6	16 mo.	6 4 mo.	5 54 mo.	17 11 45 13			
FIRST QUARTER,....	25	10	15 ev.	10 3 ev.	9 53 ev.	25 11 47 19			

DAY OF MONTH	DAY OF WEEK	Sun's declens.	CALENDAR				CALENDAR				CALENDAR			
			SUN rises	SUN sets.	MOON sets.	U. W. Bost.	SUN rises	SUN sets.	MOON sets.	U. W. N. Y.	SUN rises	SUN sets.	MOON sets.	U. W. N. Y.
1	W	14 36 17	6 33	4 55	4 16	9 33	6 29	4 59	4 15	6 19	6 27	5 1	4 14	
2	T	14 55 17	6 34	4 54	5 28	10 27	6 30	4 58	5 26	7 13	6 28	5 0	5 24	
3	F	15 14 3	6 35	4 53	rises.	11 17	6 31	4 57	rises.	8 3	6 29	4 59	rises.	
4	S	15 32 34	6 36	4 52	6 19	ev. 9	6 32	4 56	6 22	8 55	6 30	4 58	6 26	
5	A	15 50 50	6 37	4 50	7 14	1 2	6 33	4 55	7 18	9 48	6 31	4 57	7 22	
6	M	16 8 49	6 39	4 49	8 13	1 51	6 35	4 53	8 17	10 37	6 32	4 56	8 21	
7	T	16 26 33	6 40	4 48	9 13	2 41	6 36	4 52	9 17	11 27	6 33	4 55	9 21	
8	W	16 44 0	6 41	4 47	10 15	3 36	6 38	4 50	10 18	ev. 22	6 35	4 54	10 21	
9	T	17 1 10	6 43	4 45	11 14	4 30	6 39	4 49	11 16	1 16	6 36	4 53	11 19	
10	F	17 18 3	6 44	4 44	morn	5 22	6 40	4 48	morn	2 8	6 37	4 52	morn	
11	S	17 34 37	6 45	4 43	0 12	6 17	6 41	4 47	0 14	3 3	6 39	4 51	0 15	
12	A	17 50 54	6 47	4 42	1 11	7 9	6 43	4 46	1 12	3 55	6 40	4 50	1 12	
13	M	18 6 52	6 48	4 41	2 6	7 59	6 44	4 45	2 6	4 45	6 41	4 49	2 6	
14	T	18 22 31	6 49	4 40	3 4	8 48	6 45	4 44	3 3	5 34	6 42	4 48	3 2	
15	W	18 37 51	6 51	4 39	3 59	9 33	6 47	4 43	3 57	6 19	6 43	4 47	3 56	
16	T	18 52 51	6 52	4 38	4 56	10 16	6 48	4 42	4 54	7 2	6 44	4 46	4 51	
17	F	19 7 31	6 53	4 37	5 53	10 55	6 49	4 41	5 50	7 41	6 45	4 46	5 47	
18	S	19 21 50	6 54	4 36	sets.	11 34	6 50	4 40	sets.	8 20	6 46	4 45	sets.	
19	A	19 35 49	6 55	4 36	5 50	morn	6 51	4 40	5 54	9 4	6 47	4 44	5 59	
20	M	19 49 26	6 56	4 35	6 39	0 18	6 52	4 39	6 43	9 47	6 48	4 44	6 44	
21	T	20 2 41	6 58	4 34	7 32	1 1	6 54	4 38	7 36	10 28	6 49	4 43	7 40	
22	W	20 15 34	6 59	4 33	8 31	1 42	6 55	4 38	8 34	11 13	6 50	4 42	8 38	
23	T	20 28 5	7 0	4 33	9 31	2 27	6 56	4 37	9 34	morn	6 51	4 42	9 37	
24	F	20 40 13	7 1	4 32	10 34	3 15	6 57	4 36	10 36	0 1	6 52	4 41	10 39	
25	S	20 51 58	7 3	4 31	11 39	4 6	6 58	4 36	11 40	0 52	6 53	4 41	11 42	
26	A	21 3 19	7 4	4 31	morn	5 1	6 59	4 35	morn	1 47	6 54	4 41	morn	
27	M	21 14 16	7 5	4 30	0 47	6 1	7 0	4 34	0 47	2 47	6 55	4 41	0 47	
28	T	21 24 50	7 6	4 29	1 55	7 2	7 1	4 34	1 54	3 48	6 56	4 40	1 54	
29	W	21 34 59	7 7	4 29	3 6	8 6	7 2	4 33	3 4	4 52	6 57	4 40	3 3	
30	T	21 44 44	7 9	4 29	4 17	9 7	7 4	4 33	4 14	5 53	6 58	4 40	4 12	

ing, and frequently laden with miasma; persons who are obliged to dwell there should get out upon the open hills as often as possible, and let the lungs play freely in the bracing air; those engaged in rural occupations are usually enabled to resist the enervating effects of the bad air which they inhale, although not always, as we see by the prevalence of ague and other fevers among them. After all, however, for purity of air, the country is far to be preferred to the town, and in most situations the rural population are more healthful than the urban.

As a general rule it may be noted that dry air is good, if not too dry; in which case it is likely to cause cracks and chaps in the skin, and to be loaded with minute particles of dust, which are injurious to the lungs.

12th MONTH.

DECEMBER, 1865.

31 DAYS.

MOON'S PHASES.				Boston.	New-York.	Washington	Sun on Merid. or noon mark.		
	D.	H. M.	H. M.	D.	H. M. S.	H. M. S.	D.	H. M. S.	H. M. S.
FULL MOON,.....	2	2 0 ev.	1 48 ev.	1	11 49 24	1 38 ev.	9	11 52 46	
THIRD QUARTER,....	9	7 29 ev.	7 17 ev.	7	7 ev.	7 39 ev.	17	11 56 35	
NEW MOON,.....	17	0 1 mo.	11 49 ev.	11	39 ev.	7 25 mo.	25	12 0 34	
FIRST QUARTER,....	25	7 47 mo.	7 35 mo.	7	25 mo.				

DAY OF MONTH.	DAY OF WEEK.	Sun's declens. S.	CALENDAR				CALENDAR				CALENDAR			
			For Boston, New-England, N. York State, Michigan, Wisconsin, Iowa and Oregon.				For N. York City, Philadelphia, Conn., N. Jersey, Penn., Ohio, Indiana and Illinois.				For Washington, Maryl'd, Virg'a, Kent'y, Miss'ri, and California.			
		SUN rises	SUN sets.	MOON sets.	H. W. Bost.	SUN rises	SUN sets.	MOON sets.	H. W. N. Y.	SUN rises	SUN sets.	MOON sets.		
1	F	21 54 3	7 10	4 29	5 28	10 6	7 5	4 34	5 25	6 52	6 59	4 40	5 22	
2	S	22 2 57	7 11	4 29	rises.	11 0	7 6	4 34	rises.	7 46	7 0	4 39	rises.	
3	A	22 11 26	7 12	4 28	5 53	11 51	7 7	4 34	5 57	8 37	7 1	4 39	6 1	
4	M	22 19 28	7 13	4 28	6 55	ev. 44	7 8	4 33	6 58	9 30	7 2	4 39	7 3	
5	T	22 27 5	7 14	4 28	7 58	1 32	7 9	4 33	7 1	10 18	7 3	4 38	8 5	
6	W	22 34 15	7 15	4 28	9 0	2 19	7 10	4 33	9 2	11 5	7 4	4 38	9 5	
7	T	22 40 59	7 16	4 28	10 2	3 6	7 11	4 33	10 4	11 52	7 5	4 38	10 6	
8	F	22 47 17	7 17	4 28	11 0	3 54	7 12	4 33	11 1	ev. 40	7 6	4 38	11 2	
9	S	22 53 7	7 18	4 28	11 58	4 43	7 13	4 33	11 58	1 29	7 7	4 38	11 59	
10	A	22 58 30	7 19	4 28	morn	5 32	7 14	4 33	morn	2 18	7 8	4 38	morn	
11	M	23 3 26	7 20	4 28	0 55	6 24	7 15	4 33	0 54	3 10	7 9	4 38	0 54	
12	T	23 7 54	7 21	4 28	1 51	7 15	7 15	4 33	1 50	4 1	7 10	4 39	1 48	
13	W	23 11 55	7 22	4 28	2 48	8 6	7 16	4 33	2 46	4 52	7 10	4 39	2 44	
14	T	23 15 28	7 22	4 28	3 45	8 55	7 17	4 34	3 42	5 41	7 11	4 39	3 39	
15	F	23 18 33	7 23	4 28	4 41	9 44	7 17	4 34	4 38	6 30	7 11	4 39	4 34	
16	S	23 21 10	7 24	4 28	5 36	10 29	7 18	4 34	5 33	7 15	7 12	4 39	5 28	
17	A	23 23 20	7 24	4 29	6 33	11 12	7 18	4 34	6 27	7 58	7 12	4 40	6 23	
18	M	23 25 0	7 25	4 29	sets.	11 56	7 19	4 35	sets.	8 42	7 13	4 40	sets.	
19	T	23 26 13	7 25	4 29	6 24	morn	7 19	4 35	6 27	9 27	7 13	4 40	6 31	
20	W	23 26 58	7 26	4 30	7 23	0 41	7 20	4 36	7 27	10 12	7 14	4 41	7 30	
21	T	23 27 14	7 26	4 30	8 27	1 26	7 20	4 36	8 30	10 52	7 14	4 41	8 32	
22	F	23 27 2	7 27	4 31	9 32	2 6	7 21	4 37	9 34	11 39	7 15	4 42	9 35	
23	S	23 26 21	7 27	4 31	10 37	2 53	7 21	4 37	10 38	morn	7 15	4 42	10 39	
24	A	23 25 13	7 28	4 32	11 44	3 43	7 22	4 38	11 44	0 29	7 16	4 43	11 44	
25	M	23 23 36	7 28	4 32	morn	4 38	7 22	4 38	morn	1 24	7 16	4 43	morn	
26	T	23 21 31	7 29	4 33	0 52	5 34	7 23	4 39	0 51	2 20	7 17	4 44	0 50	
27	W	23 18 57	7 29	4 34	2 2	6 39	7 23	4 39	1 59	3 25	7 17	4 45	1 57	
28	T	23 15 56	7 29	4 34	3 9	7 42	7 24	4 40	3 6	4 28	7 18	4 45	3 3	
29	F	23 12 27	7 29	4 35	4 18	8 48	7 24	4 40	4 14	5 34	7 18	4 46	4 10	
30	S	23 8 29	7 30	4 36	5 23	9 50	7 25	4 41	5 19	6 36	7 19	4 47	5 15	
31	A	23 4 4	7 30	4 37	6 24	10 45	7 25	4 42	6 20	7 31	7 19	4 48	6 16	

Moist air is not healthy to breathe, especially if accompanied by cold, as it often is in this climate; hence the prevalence of pulmonary diseases. The air of the coast, if not too keen, is undoubtedly stimulating and strengthening, in a great measure owing, probably, to its containing a portion of the marine constituents; there is a healthful freshness in the very play and dash of the waves, and the lungs seem to inhale larger quantities of the atmosphere, and to expand more freely, by the margin of the wide ocean; here that indispensable condition of atmospheric purity, constant motion, ever prevails, as it does usually upon great elevations, hill-tops, and lofty table-lands, around and over which the gales sweep.

THE
ILLUSTRATED ANNUAL REGISTER
OF
RURAL AFFAIRS.



COUNTRY HOMES.*

RHOUSe is always a teacher; it may become an agent of civilization. While builders minister to deceit and vanity, those vices will prevail; when their works embody fitness, truth and dignified simplicity, these republican virtues will be firmly rooted in the nation. Few are aware how strong an influence is exerted by the dwelling on its inhabitants.

Mistakes in building are more often made through want of thought than lack of taste or means; still the consequences are equally serious.

To harmonize with the surrounding scenery, to enter into the spirit of the landscape, is the highest beauty of a domestic building. This is too often overlooked;—and we find the dignity and repose of Nature broken by the presence of white, bare, bleak abodes, set ostentatiously in unplanted fields. Flat roofs and horizontal lines are opposed to the ascending lines of rocks and mountains around them; lofty turrets and steep gables rise up to contradict the natural expression of level plains. A house may be considered beautiful in the situation which suits it; its precise copy, in an unfit place, will always be a miserable deformity.

* The plans and most of the matter of this article were furnished by an assistant.

Fashion is not the synonym of taste; nor is beauty monopolized by wealth. A low log-cabin, nestled in the woods, the moss grown over its roof, the morning-glories climbing to the rustic window, is more attractive and is a better home than many a costly marble mansion. But the effort of "putting the best foot foremost," and anxiously attempting much display, costs our country homes the truth, the comfort, the sobriety which ought to characterize their architecture.

No house can fail to please whose form and hue accord with the adjacent country; which looks just what it is, neither less nor more; whose proportions and details are formed upon the principles of taste; and whose inner arrangement regards economy of space and gives attention to the laws of health,—requiring the fewest steps, presenting the greatest cheerfulness, neatness and convenience for common and daily-use. All which the poorest man who builds can have as well as the rich; for Providence opens a short road to comfort, but hedges up the path to luxury.



A SMALL COTTAGE.

This design, being intended for a respectable family of limited means, who desire a home of their own, however humble, has been supplied, to meet the wants of such, with every facility for refined domestic life; although, of course, in a small way.

There is but one large room for general family use, but this is furnished with a pantry 5 by 8 feet, and a platform adjoining the wood-house, where, in mild weather, much coarse work may be performed. From this the cellar stairs descend, directly under the flight to the upper story. The closet in

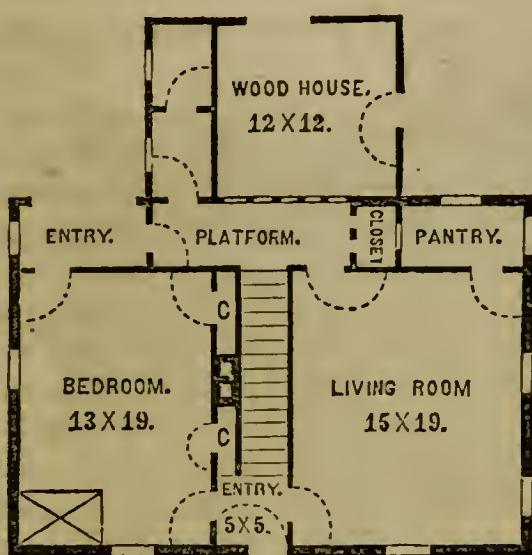


Fig. 3.—First Floor.

marked by a parallelogram crossed by diagonal lines; and all the doors in this and the succeeding plans are marked with dotted lines, showing in what direction they should swing back.)

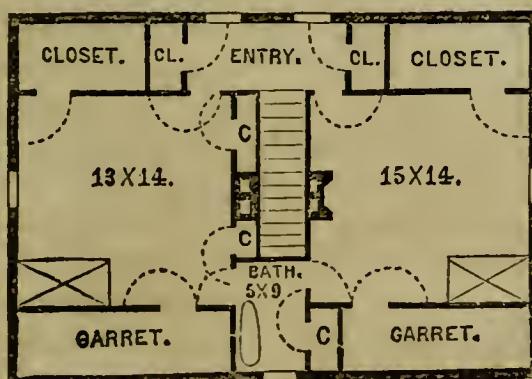


Fig. 4.—Chamber Floor.

this platform may be constructed only three feet high, to contain iron ware, and the top of it can be used as a table for washing dishes. The sliding window in the pantry will allow the replacing of the dishes without taking them around through the living-room door. The platform being in the body of the house, is simply enclosed on its outer side by the studding of the walls—in this a door-way should be made to allow free access to the wood-house.

There is a large bed-room on the first floor, having two closets. (The place most suitable for the bed is

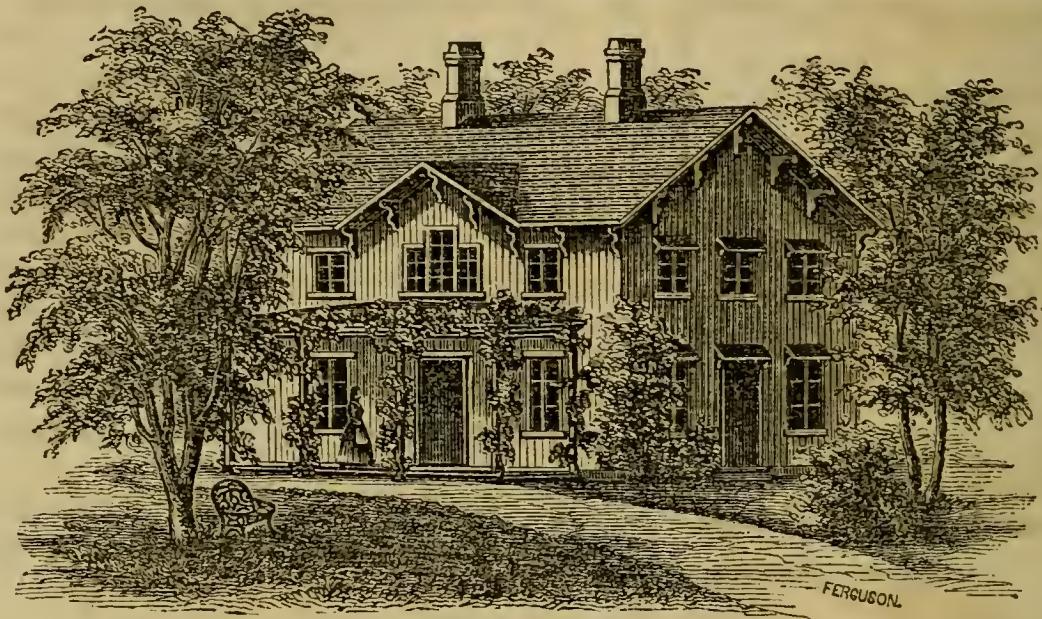
The upper story is occupied by two bed-rooms and a bath-room. The garrets are obtained by enclosing the sloping space on each side of the chambers, thus leaving them of proper height throughout.

The right hand chimney, rising only from the second floor, should be solidly supported by thick planks in that part of the floor where it stands, to prevent its settling. The stove-pipe from the living-room fire passes up into the room above to enter the chimney.

The body of the house is 25 by 34 feet, with a wing 12 by 17 feet.

Cost of Erection.—The cost of building in accordance with these designs will vary much with the degree of finish and price of materials, and the estimates furnished can be considered only as approximate ones. They are made, in all instances, on the basis of prices before the war, to which the requisite additions must be made in accordance with the increased rates. The estimates are also intended for wood—if built of stone or brick, nearly one-half more should be added, varying with localities.

The cost of a house built according to the preceding design, would be from twelve to fifteen hundred dollars.



A BRACKETED SQUARE HOUSE.

The building, plainly and neatly constructed of wood, and vertically boarded, would cost, before the war, eighteen hundred to two thousand dollars. It is thirty-three feet square and one story and a half in height; the lower story should be nine feet high, and the upper one five feet on the sides, when finished, and as much higher in the centre as desired.

On the first floor there is a parlor, bed-room, sitting-room and kitchen—the last two communicating by an entry from which the cellar stairs de-

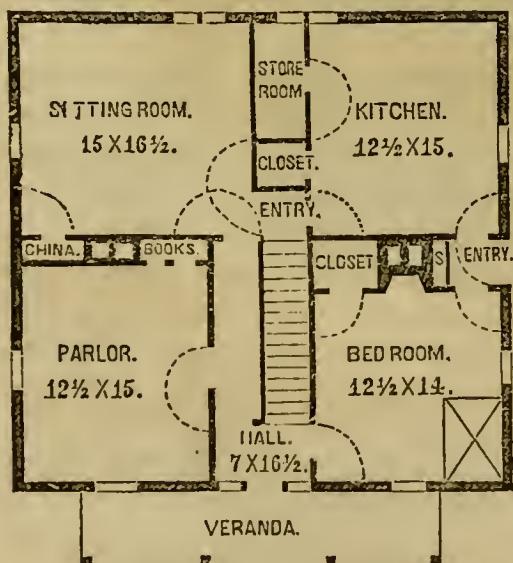


Fig. 6.—First Floor.

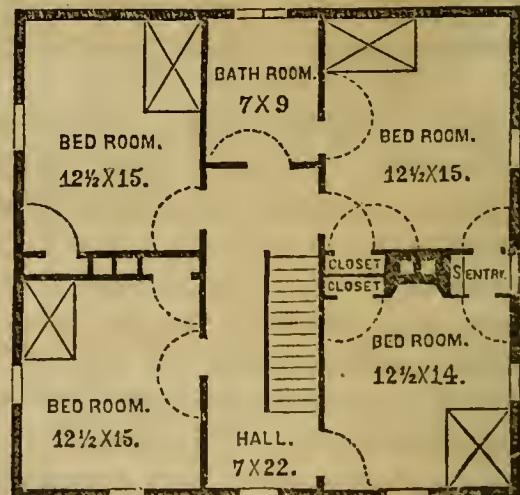
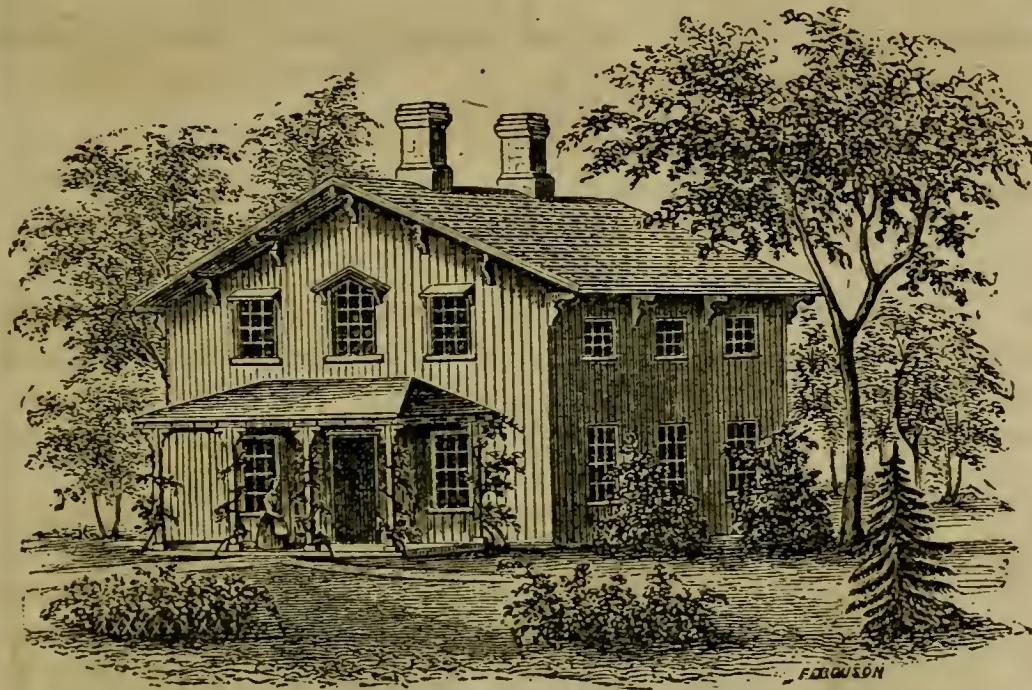


Fig. 7.—Chamber Floor.

scend. Both bed-room and kitchen open into an entry with an outside door, whose left-hand side is occupied with shelves for kitchen use, or a sink or

the water-pump might be placed there, as the convenience of the family might most require.

The stairs which lead to the chambers are near the bed-room door—an advantage to the mistress of the house in case of sickness. The two right-hand rooms on the second floor are adapted to family use, one of them having a door into the bath-room, and both being connected by a lighted passage, with shelves on one side, as in the one below. All the bed-rooms are furnished with closets, and are nearly equal in size.



A PLAIN COUNTRY HOUSE.

This dwelling, neat and cheerful in its exterior, is 32 by 35 feet in size, and so simple in the arrangement of its rooms as to require little explanation.

The parlor and sitting room are entered by a small passage-way opening on the veranda in front. A side hall connects with the three principal rooms, and contains the stair-case. The kitchen is entered through the sitting-room, and has a pantry adjoining.

The upper rooms are equal in size to those below them, and are furnished with closets; between two of them a small bathing-room is situated. The recess, 5 by 8 feet, in the right-hand front bed-room, forms a pleasant place for sewing or study; or may be set off by a partition to form a separate room.

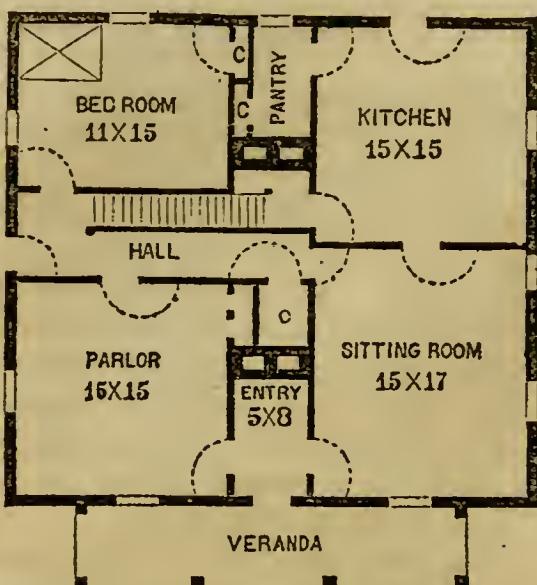


Fig. 9.—First Floor.

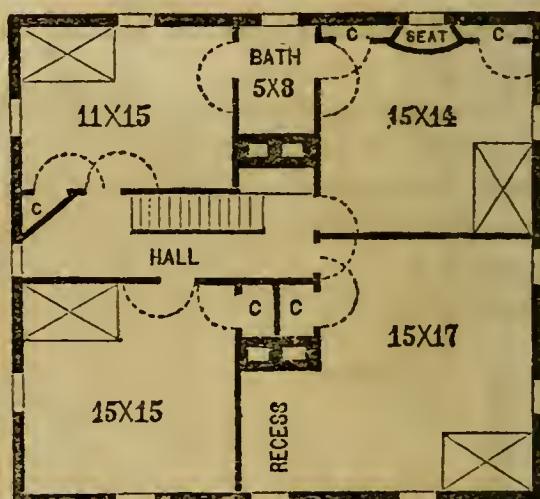
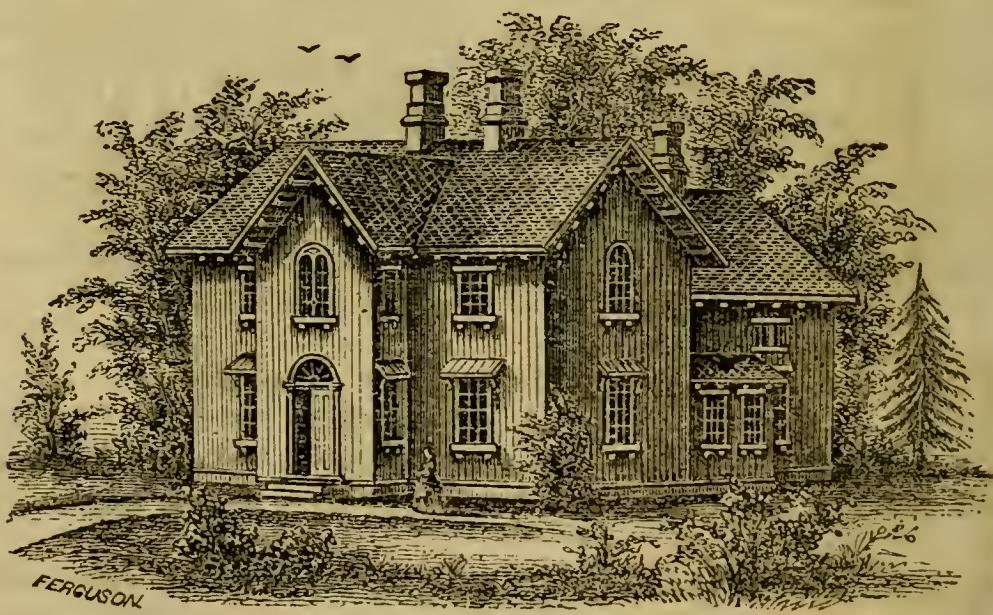


Fig. 10.—Chamber Floor.

The expense would be about the same as in the preceding design.



A CONVENIENT DWELLING.

The plan affords a parlor, sitting-room, kitchen and seven bed-rooms, and is adapted to the use of a large family residing in a country village or on a farm of moderate size.

The front porch may be fitted with glazed windows and a door in winter, in order to add to the warmth of the hall. The sitting or dining-

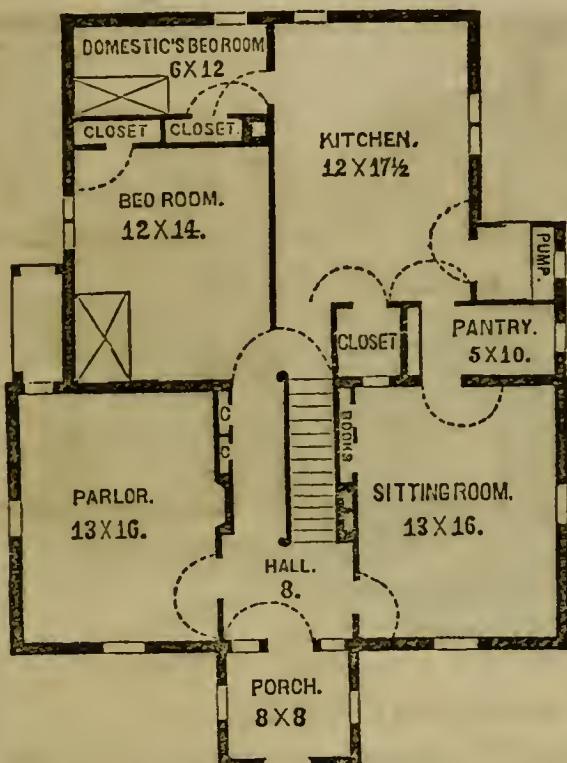


Fig. 12.—First Floor.

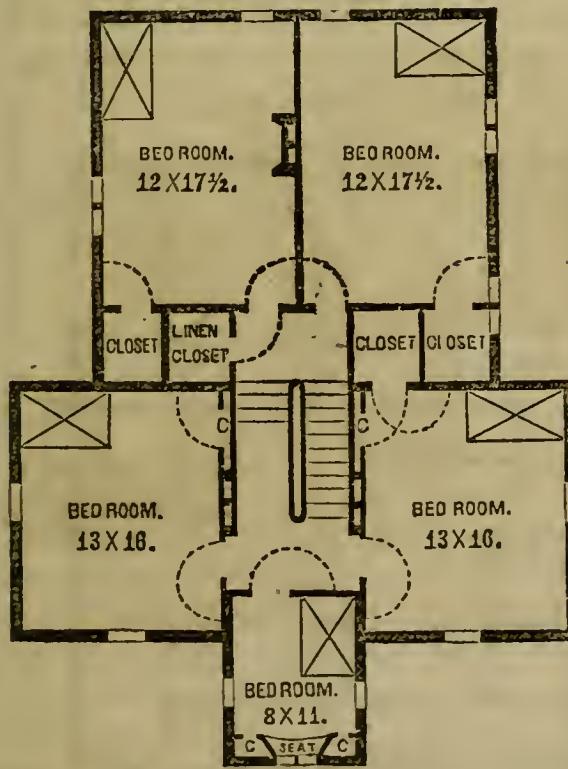


Fig. 13.—Chamber Floor.

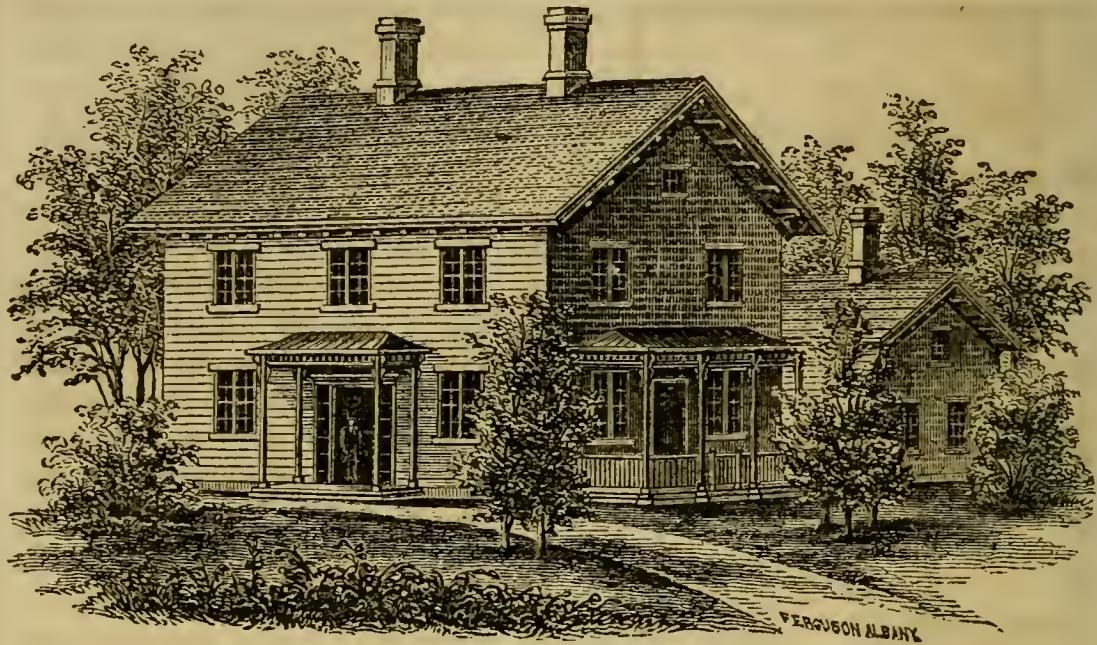
room is separated from the kitchen by the pantry—an arrangement which is approved by all who have tried it; as it excludes much noise and smoke from the dining-room, while the pantry is accessible to both rooms at once.

The wing is not as high as the main part of the house in either story—the difference between the height of the lower rooms requiring that the bed-rooms in the upper story of the wing should be entered from the landing of the stairs; a few more steps lead to the upper hall and the front rooms.

There are several points in which this design may be modified to suit different tastes and requirements. Most persons would prefer a sliding window, or no connection at all, between the bed-room on the first floor and the kitchen. Some might wish a door in the parlor to open on the little back porch, instead of a window opening from the floor by weights and pulleys; or choose to employ the airy and pleasant little bed-room, 8 by 11, above stairs, as a study or sewing room. These changes are easily made.

The cost of this building would be about two thousand two hundred dollars.

[The engraving of the perspective view is defective in some particulars, but serves to give the general expression.]



FERGUSON ALBANY.

A LARGE FARM-HOUSE.

In the erection of this class of dwellings, we need to strike a happy medium between the unsuitable and profuse adornment sometimes used, and

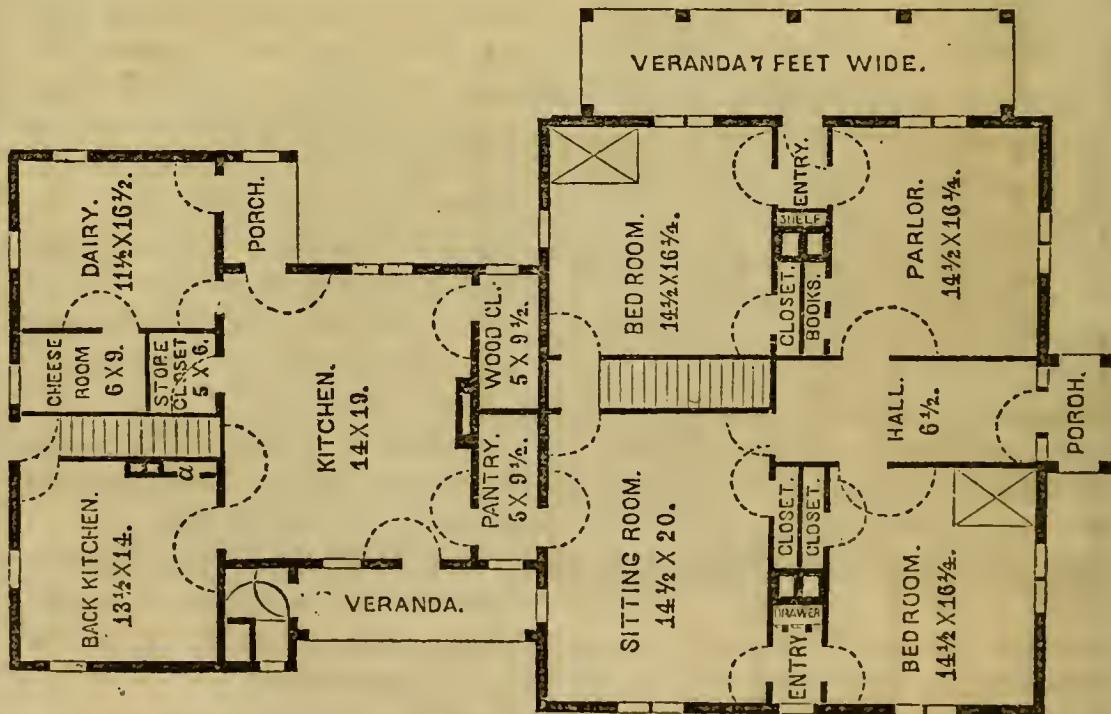


Fig. 15.—First Floor.

total disregard of taste and the neglect of every mental and social requirement. More of the real character of the country gentleman should be expressed—his culture without foppishness—honesty without rudeness.

Upon this principle the present design is believed to be based. While every facility for household labors is presented, there is scope offered for home comfort, intellectual improvement and wide hospitality.

The front rooms are so placed, that they must be more or less used by the family. The house consists of two buildings, a large one in front and a small one in the rear,—connected by the kitchen, which is only one story in height,

with a lofty ceiling following up the slope of the rafters, so as to be high in the centre; lighted by windows on each side, and surrounded by all the closets, &c., required in domestic labor. The wood closet must be kept filled with wood, cut ready for use in a detached wood-house. The dairy or milk-room has an outer door of its own, and a large closet for keeping cheese. This closet is so situated that the odor of the cheese is not likely to fill the house. The cellar stairs are easily accessible from kitchen, dairy and back kitchen, and the stairs to the back chambers can be used by the hired men without their entering the other rooms, as the passage leading to them opens out-of-doors. The large and pleasant sitting-room is near

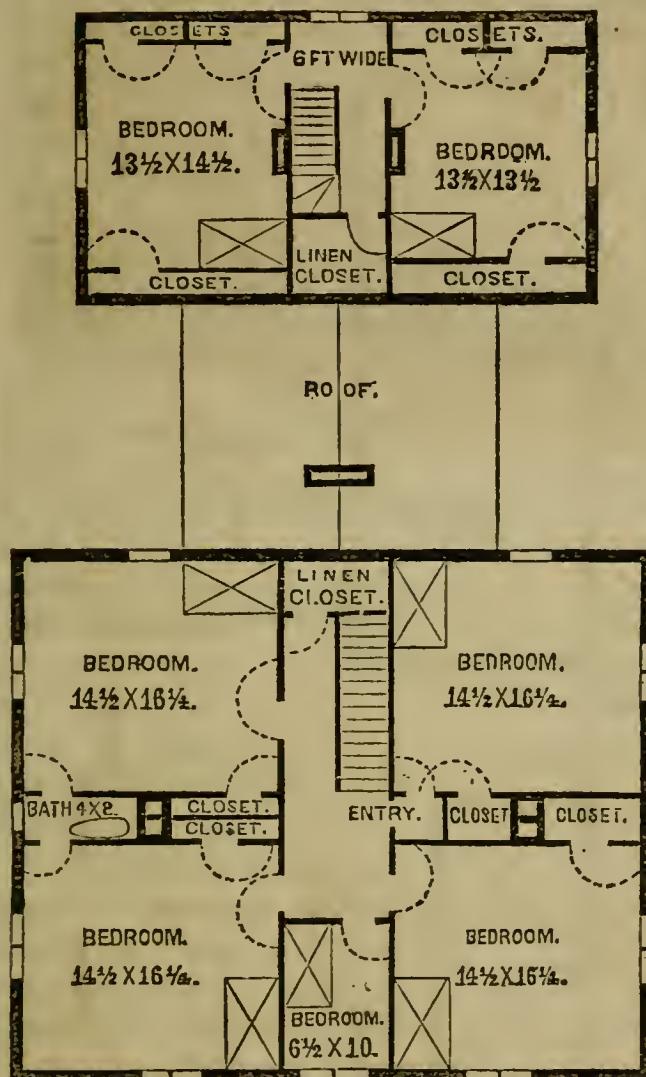


Fig. 16.—*Chamber Floor.*

the kitchen, the front stair-case and two bed-rooms. Some of the doors to the upper rooms should be partially glazed, to admit enough light to the upper hall; or the small bed-room might be omitted and the hall thus lighted by the front window. The four other bed-rooms are all large, of equal size, and furnished with ample closet-room. The upper room on the right hand, (being reached only by an entry,) is more retired than the rest, and would be comfortable and quiet for an invalid.

The upper floor of the rear building is occupied by two good bed-rooms, for the use of domestics, &c., closets being made next to the eaves. A gable-window lights the space between the rooms. Cost, about \$3,300.

A LARGE COUNTRY HOUSE.

The form of this design is a plain parallelogram, 40 by 43 feet, with a projection in front three feet deep, and verandas on both sides.

It is suited to the wants of a large and genteel family, who occupy it as a country residence. With considerable modification of plan, reduction in

size, and built with a plain wooden exterior, it would answer the purposes of a country boarding-house.

The house is entered by a porch which opens into a large hall, with parlor on the right and dining-room on the left hand. The latter 16 by 19

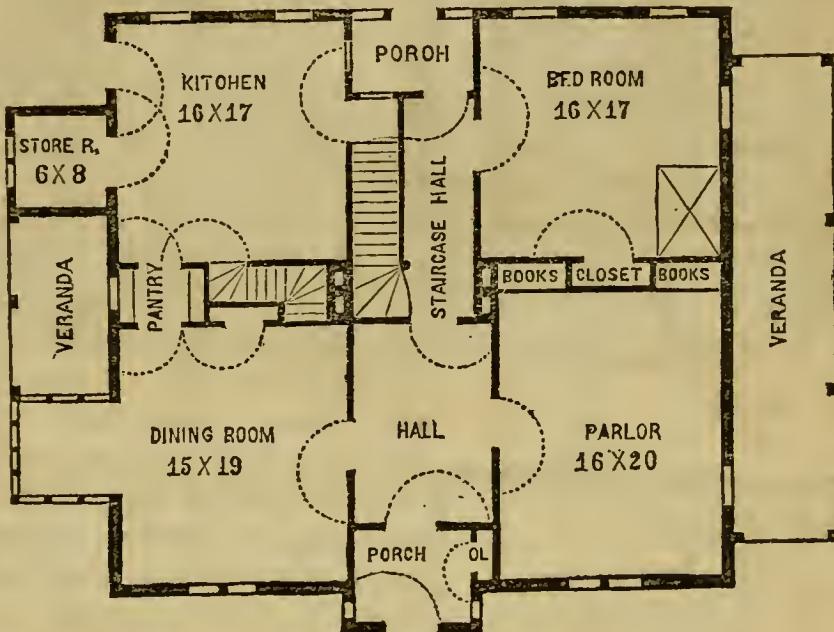


Fig. 17.—First Floor.

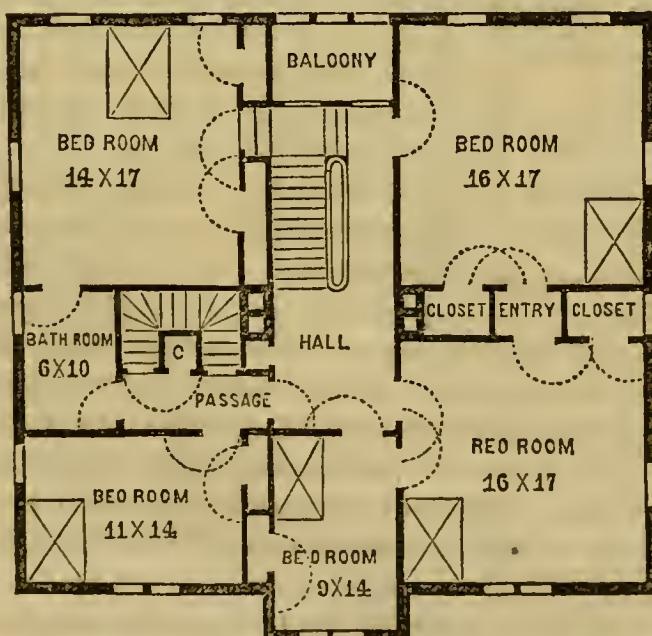
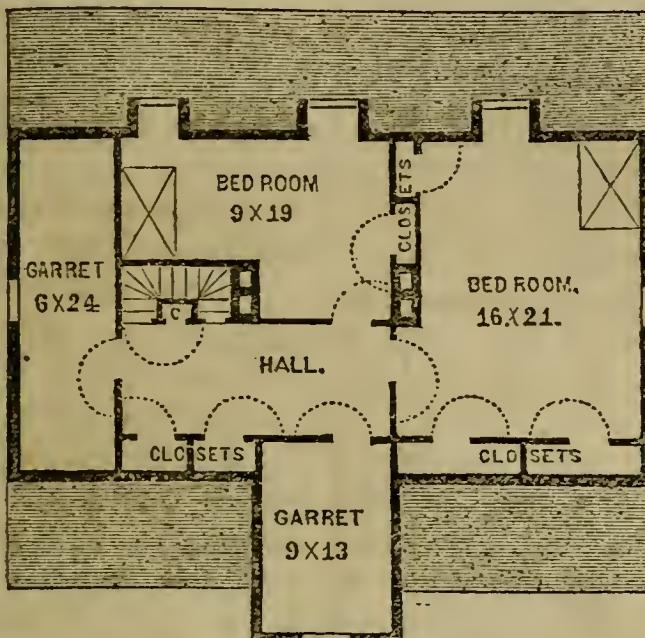


Fig. 18.—Second Floor.

a number of closets fill up the second story.

feet, (misprinted 15 by 19,) contains a large bay window into which the dining-table may be extended if more room is needed. An enclosed porch, or arcade, is situated at the end of the staircase hall. If the cost of this feature is considered too great, the hall can extend to the outer wall of the house. The landing of the stairs looks out on the balcony; a few broad steps on the left hand lead to a retired chamber; the right hand steps to the upper hall. Five sleeping rooms, a bath-room and A servants' stair-case lands in

Fig. 19.—*Third Floor.*

the passage to the bath-room, and directly over this a flight ascends to their rooms in the attic. Here the steep rise of the roof affords ample space for two sleeping-rooms, lighted by dormer windows in the roof, and closet space and garrets besides.

The house is intended to be warmed by a furnace, but provision is made for heating with stoves all the lower and most of the upper apartments.

The cost of erecting this dwelling, before the war,

would have been about \$3,500, but the amount could have been considerably increased by a higher finish.

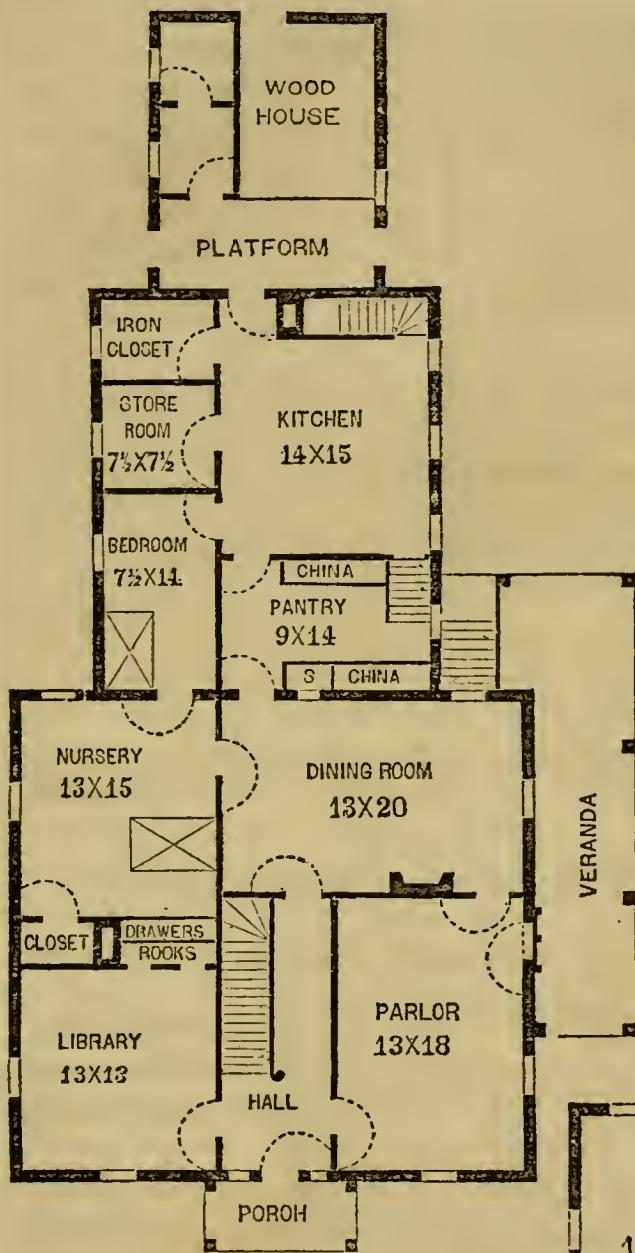
No elevation is given, but Design No. 10, of Vaux's Villas and Cottages indicates the general expression.

A VILLAGE RESIDENCE.

The plans and view* here given represent a residence erected some years ago in the village of Union Springs, N. Y. It is built of wood, with the walls filled in with brick.

The plans need but little explanation. A double door, (the outer a Venetian blind,) leads from the parlor to the veranda, in front of the ornamental garden, and commanding a view of Cayuga lake, half a mile distant. The nursery contains a series of drawers, set even with the wall, for containing miscellaneous articles. They are nineteen in number and placed in five series, one above another, the upper ones being small and the lower ones large. The bed-room between nursery and kitchen may be used as a bath-room, being readily accessible to the kitchen for obtaining heated water. The walls of the pantry are furnished with continuous shelves, all of which are closed with tight, narrow doors. A door about two feet square, breast high, between the dining-room and pantry, having a shelf a foot and a half wide on the pantry side, admits the free passage of dishes

* For the view, accurately copied from a photograph, see vignette, p. 129.

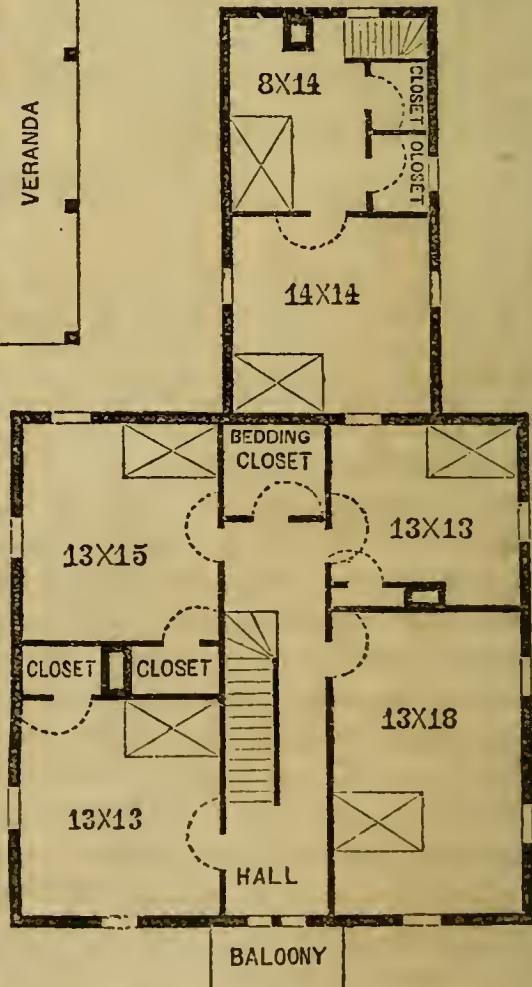
Fig. 20.—*Principal Floor.*

rooms, as shown in the annexed plan. The outer one contains a stone cistern about six by ten feet, from which the water is drawn through an inclined pipe by a pump in the kitchen placed over a stone sink. The same room is also used as a coal-cellars, and contains the hot-air furnace. Adjoining this is a room for the general purposes of a cellar. It contains a set of hanging

without opening the common door. A similar one is placed in the second story, between the room over the dining-room and the room for domestics over the kitchen, and proves a great convenience.

The observatory, shown in the perspective view, commands an extensive prospect, including many miles of Cayuga lake, the surrounding country and distant blue hills.

The basement is finished with a smooth floor of hydraulic cement, and is divided by eight-inch partitions into three

Fig. 21.—*Chamber Floor.*

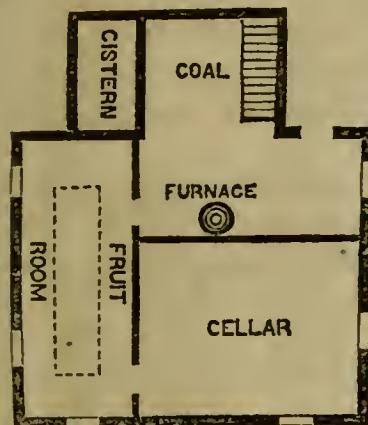
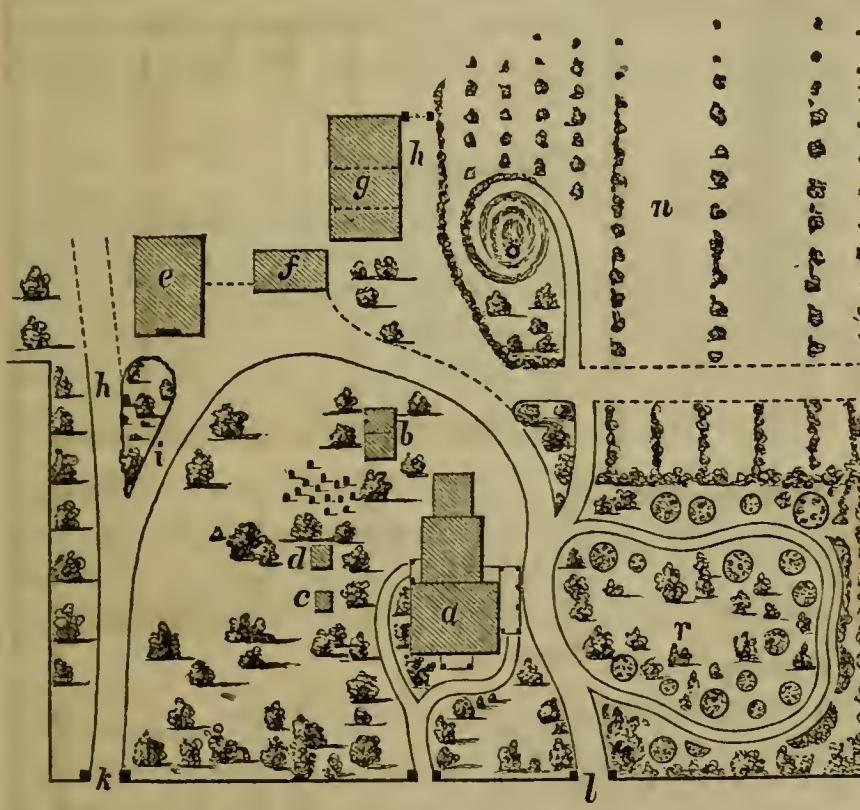


Fig. 22.—*Basement on reduced scale.*

finely on the lower shelves with a thick covering of woolen blankets.

This house stands on a small farm of about sixty acres, on one of the outer streets of the village, and the adjacent grounds of about two acres are represented in the annexed engraving. L is the carriage entrance from



the street, K the entrance to the farm and barns. R represents the ornamental garden, consisting of a closely shaved turf, through which the curved walk passes, and in which circular and irregular flower-beds are cut. Seats are placed under the trees and a summer-house in the remote corner.

In the rear of this portion, and separated by an evergreen screen is the kitchen and fruit garden n, containing rows of dwarf apples, dwarf pears, and the smaller fruits, so arranged that the cultivation can be performed to a considerable extent by a horse. A natural depression at o, about thirty feet in diameter and eight feet deep, with a curved walk to the bottom, is planted as a secluded flower-garden. On the other side of the dwelling a,

and nearly hidden by trees, are the smoke-house *c*, the ice-house *d*, the children's play-room and tool-house *b*, and between them a group of bee-hives. The road *i*, extends to the carriage-shed *f*, and the horse-barn *e*, and *h h* to the orchard and farm—*g* represents the farm-barn.

The residence here represented, (built and occupied by the author of the REGISTER,) was erected when materials were cheap, at a cost of a little over three thousand dollars. At the present increased prices nearly double this sum would be required.

A MONTHLY CALENDAR OF WORK, FOR THE NURSERY, ORCHARD AND FRUIT-GARDEN.

The following pages are intended as a continuation of the calendar for farm work contained in the REGISTER for 1864. The importance of doing work at its proper season, and of preventing the confusion and increase of labor occasioned by neglect and delay, it is believed will give particular value to these hints.

Work for January.

The labors for this month are not many, but some of them are of much importance. Where there is danger from mice, and the precaution of banking up was not performed in autumn, it will be advisable after each fall of snow to tread it firmly about the stem, which will exclude these predators by preventing their burrowing. Where rabbits prove destructive, they are caught in traps; strewing corn near the trees will induce them to leave the trees for the corn.

Orchards and fruit-gardens should always be on naturally or artificially drained land—but it sometimes happens that a mid-winter thaw, accompanied with rain, will flood a young orchard, and subsequent hard freezing will injure the trees. Provision must therefore be made for surface draining, wherever accumulations of water occur.

PRUNING.—Young trees in the nursery, and older ones in the orchard, of the hardier kinds, may be pruned during open weather. All wounds in orchard-trees, an inch or more in diameter, should be protected from the weather by a coating of ochre paint, shellac varnish, tar and brick-dust, or grafting wax. The surface should be allowed to remain uncovered a few days after the cut is made, in order to become dry. The neatest application is shellac dissolved to the consistency of thick paint in alcohol—the handle of the brush being inserted in the cork, it is kept air-tight in drying, and always ready, (fig. 24); but fine sand, brick-dust or powdered chalk, mixed with warm gas-tar, is a good application and much cheaper. Grafting wax



Fig. 1.—*Bottle of shellac and brush.*

does well, and may be applied with a brush when melted, or in the form of thick plasters.

GRAFTS may be cut and packed away for spring use. They should all be accurately and distinctly labelled, to prevent mistake; they may be packed in finely-broken, damp moss, or buried in earth—or if in small quantities, so as to prevent heating, in damp saw-dust. In cutting, the name may be kept temporarily by writing with a common lead pencil on a shaved portion of the shoot, (fig. 2); but for packing away permanently, write the name on both sides of a strip of shingle, say a foot long and half an inch wide, (fig. 3,) and tie this up with the scions, the outside writing readily showing the name, and the inner to refer to in case the outside is erased, (fig. 4). Scions not fully hardy, as of most sorts of plum, should be cut early in winter, or before they have been exposed and injured by severe cold. The new postage law allowing scions to be sent cheaply by mail, they are best put up by enclosing them air-tight in cases of oil-silk, (such as is used for hat-lining,) by wrapping the oil-silk about the scions and over the ends, and then passing a fine thread repeatedly round from end to end, making the whole air-tight, (fig. 28). The natural moisture is thus preserved, and they



Fig. 28.—*Grafts packed for sending by mail.*

cannot shrivel. The names should be written with pencil on the ends, and no paper for this purpose wrapped around them, as it absorbs the moisture. Grafts have been shrivelled and spoiled by mistakenly placing dry cotton batting among them before being thus encased. To send grafts in larger quantities by "express," pack them in alternating layers of fine, slightly-damp moss. It is always important, whether packing grafts for keeping or for distant conveyance, to preserve the natural moisture precisely, and no more. If the packing is too wet, they will become water soaked and rot.

EXCLUDING CATTLE.—It should not be forgotten that where cattle run contiguously to orchards, serious damage is sometimes done by their break-

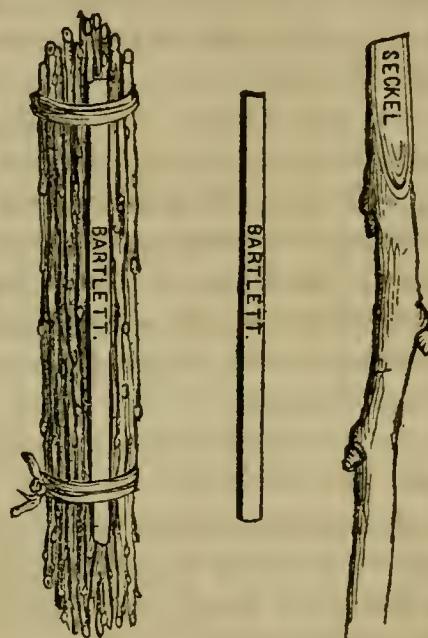


Fig. 4. Fig. 3. Fig. 2.
Marking and packing grafts.

ing in at this season of the year—hence the importance of seeing that gates are kept closed, and fences in good repair.

BUYING TREES.—Those intending to purchase trees in spring should now carefully ascertain where they can be procured with most certainty as to quality and kind. Never purchase of travelling venders, unless their character and that of their employers, are fully established; and above all, never take a tree of an unknown pedler, who has, perhaps, bought them, at low prices, of unreliable nurserymen, and, after drying them a week in the air, offers them as “very cheap.” Where trees are to be obtained from a distance, send the order soon and avoid the false economy of trying to save expense by meagre packing. It is better to pay two or three cents per tree to have them well put up and to have them arrive in perfect condition, than half this amount and lose ten times the value in shrivelled trees.

PACKING TREES.—Those who have trees themselves to pack for transportation in spring, should now see that the following materials are provided:—Boxes, with iron straps or hoops for the corners—moss, for the roots—straw, for the tops—labels, for designating the sorts—flag, oziers, or rye straw, for tying bunches—large labels of cloth, parchment or wood, for designating bunches—lamp-black, and turpentine or rock-oil, and brush for marking boxes. If the trees are to be packed in bales or bundles, provide long, straight rye or other straw—baling-cord—gunny-cloth or Russia mats—sewing-twine—large packing-needles—directing-labels—white-lead paint and soft pencil.

MANURING.—Orchards and fruit-gardens which need enriching should now receive a coat of manure, evenly spread over the whole surface, to be plowed or spaded in, in spring, if practicable; or if not, to be left on the surface, the soluble portions being carried into the soil by rains and melting snows. But caution should be used in placing much long manure against the stems of small trees, which might invite mice.

REGISTERING ORCHARDS.—Much inconvenience and often many mistakes arise from not preserving the names of varieties in young orchards. The trees are received, correctly labelled, from the nursery; these are left on the trees till the wires cut the limbs, or until effaced by time, and the sorts are forgotten. In a few years the trees begin to bear, but the names being gone the owner consults his neighbors, and probably receives very erroneous names, and thus misnomers are multiplied.

FORCING.—Full directions are not here intended, but only brief memoranda for hints in season. In forcing strawberries begin with a rather low temperature, or about 55° , and, as growth advances, gradually increase to 60° and 65° . Give a good supply of water uniformly at all times, and avoid flooding. It is important to preserve the moisture and temperature uniform, without sudden changes, or the buds will drop. Grapes for forcing now coming into leaf, should be kept at 60° or 65° . Equalize by pinching

the shoots on different parts of the vine, especially on grapes in pots, retarding the upper shoots and encouraging the lower.

GRAPE CUTTINGS.—These should be kept rather cool at first, and the heat afterwards gradually increased. Keep the air moist above them; if too dry, so as to require watering, the superabundance of moisture below will rot them. Similar precautions are required in raising grapes from eyes.

Work for February.

Read carefully the directions for last month, many of which are applicable for the whole winter, and preclude the necessity of saying much here.

ROOT-GRAFTING the apple may be performed during the whole of this month. In order to do the work expeditiously, the tools and appliances should all be in perfect order, and everything placed so convenient that no unnecessary movement of the hand, consuming time, may be made. For full directions for performing the work, with illustrations, see page 315, Vol. II of *RURAL AFFAIRS*. The apple is nearly the only fruit that can be successfully root-grafted. Occasional success attends the root-grafting of the pear, but more commonly it results in total failure. In all grafting, it is desirable to select well-ripened, vigorous scions; the lower buds on the shoot are too nearly dormant to push readily, and the upper part is often too immature or spongy to succeed well. The middle portions of the scion are therefore always the best.

CATERPILLAR'S EGGS.—Pass through orchards and fruit-gardens with a basket on the left arm, and a knife or pruning-shears on a pole in the right hand, and clip off every shoot that contains a nest of caterpillar's eggs and carry them in the basket and burn them. Each nest contains several hundred eggs, (fig. 6,) and trees are now more easily and effectually cleared of them than after they have hatched and formed large webby nests. They encircle the young twigs near the extremities, and are thus easily detected by the practiced eye, and readily clipped off. A day should be selected for this work when the sky is rather dark, otherwise the eyes will be unpleasantly affected by the constant looking upward.

MANURING ORCHARDS.—Top-dressing orchards which are not growing with sufficient vigor, may be performed to advantage at any time during the month. Spread the manure evenly over the whole surface, and the thaws and rains of spring will carry the soluble parts into the soil.

Stakes for straightening up trees, labels for marking them, and ladders for gathering fruit, may be made on stormy days. For the mode of constructing different kinds of ladders, see pages 66 and 67, Vol. II of *RURAL AFFAIRS*.

Fig. 6.



PRUNING.—All hardy trees may be pruned any time during the month, and those inclining to be tender, such as the peach, should be left a month later. All pruning intended to promote growth, should be done before the buds swell in spring. If done after the leaves expand, or while growth is in progress, the tendency is to check the tree, although the wounds heal more readily at this time.

GRAPE-HOUSES.—We cannot do better, under this head, than to copy the following brief directions from an experienced manager:

"Grape-vines in the houses, started in December, will now be out of bloom and swelling their fruit; commence thinning the bunches in good season, and be careful in doing this not to handle the berries, as they are very susceptible of injury at this season; maintain a good temperature and keep up a genial atmosphere by liberal damping of the floors in good weather. Vines in graperies and green-houses will now begin to swell their buds, and a good syringing, morning and night, will help to swell them up, and assist them in breaking stronger and more evenly; 50° to 55° is sufficient for a night temperature for the first fortnight. Vines in pots, brought into the house last month, will now be growing freely, and should be carefully watered."

Work for March.

Read the directions for the two previous months, and any work unfinished then may be now completed.

HEADING-DOWN BUDED TREES should be done during the present month. All prominent buds on the stock should be rubbed off at the same time, as this will lessen the subsequent labor when the shoots begin to start, and prevent that check in the tree which is always given when any considerable amount of foliage is removed after growth has commenced.

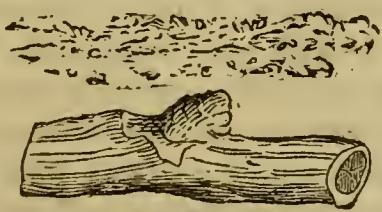


Fig. 7.

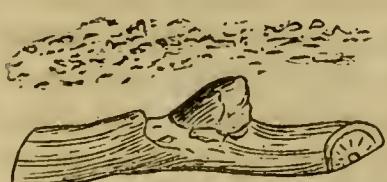


Fig. 8.

HARDY GRAPEVINES may be pruned if the work has not been already attended to. Grape eyes may be now started in the hot-bed. They are placed in pots about half an inch deep, as shown in the annexed cuts, (figs. 7 and 8.)

GRAFTING THE CHERRY, in order that full success may be attained, should be done at least a week or two before the buds begin to swell. If left much later, the operation becomes quite uncertain, and if the buds have already begun to expand it will be labor thrown away. Plums should be grafted immediately following, or

nearly as early as the cherry. Finish cutting all grafts before the buds swell.

CHERRY-STONES, intended for raising stocks, should be planted as early as possible, as they commence sprouting in the ground where they have been

buried, the very moment the frost disappears from the soil. Apple and pear seeds should be left but little later.

ROOT-GRAFTING THE GRAPE is shown in the accompanying figure 9. A small portion of root is inserted in the graft, and the parts bound together with strips of waxed paper, leaving a portion open below for the emission of roots. A bottom heat under glass soon starts them, and they are transferred to pots, and afterwards to open ground.

An objection to this mode of propagation is that the grafts sometimes fail, and the roots grow, causing mixtures. The following excellent method is described by E. W. HERENDEEN, in the COUNTRY GENTLEMAN:—“Good, well-ripened wood, of large growth, is made up into lengths about two and a half inches long, having the bud at the upper end, about a quarter of an inch from the top, (fig. 10.) Pure clean building or lake sand is placed about three

inches deep over
the tanks in a
forcing house,
into which the
pieces of grape-
wood are placed
at an angle of

Fig. 9. about 45° , leav-
ing the bud just at the
surface of the sand. They
are placed in rows about
two inches apart, and about
an inch apart in the rows,
and the sand well pressed
to the wood.

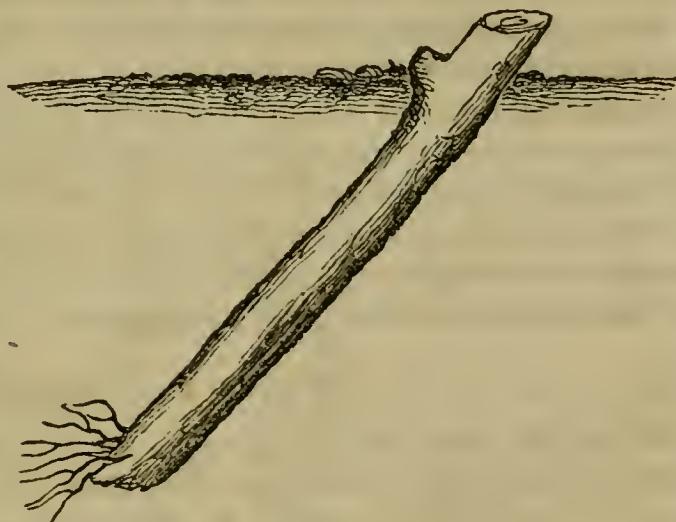


Fig. 10.

The sand should be warmed by the water in the tanks to the temperature of 65° , for a day or two, gradually raising it in a few days to 90° or 95° . The air in the house should be kept 10° lower, if possible, than the sand, at all times. Keep the sand moderately wet, and the temperature as even as possible, avoiding sudden changes. In about a week the buds will begin to swell, and in three or four weeks fine roots will break out in the bark, generally towards the lower end.

When the roots are three or four inches long they should be potted off in mold, made either by rotten sods or wood earth and sand, mixed in about equal proportions, and given plenty of water for some time, until well established in their new home, when they may either be left in the pots, or if the house is too full, turned into open ground.

The advantages of pure sand for striking the cuttings, seems to consist in

its being a good conductor of heat, and does not pack hard by wetting. Of course, the young roots grow from the organized matter in the cutting, the same as potato sprouts grow from a potato.

It is important to keep the air in the house colder than the sand, for the object is to stimulate the cutting at the root, and not by having a warm air and cold sand, stimulate the buds to throw leaves before the roots are formed, thereby causing the exhaustion of the cutting. For this reason it is best to start the cuttings in the house in the early part of April, while the air is cool, so the temperature of the house can be regulated.

It is very important to use none but good buds, as no process can give vitality to dead ones, or any success to imperfect ones—scarcely one in a hundred failing to grow when good buds were used."

BEARING PEACH TREES may be now shortened back, according to the directions given in the article on pruning. Trees are often allowed to bear too many peaches, diminishing the size and quality, without increasing the number of bushels. Cutting back the shoots is an easy and excellent mode of thinning the crop; and the severity of the thinning may be varied with the amount of the wood thus removed.

GRAPE-HOUSES.—“Vines in the earliest houses,” says a practical writer, “are now swelling up their fruit, and with the longer days and warmer sun will soon show a rapid improvement. Continue to top all laterals; thin out the bunches if the crop is too large; give liberal quantities of air in good weather and maintain a humid atmosphere. Vines in the green-house will now be breaking: syringe every morning until well out in leaf.”

Work for April.

This month being the principal one for transplanting, comprises a large number of important operations. The land for setting out young trees should be prepared, if possible, in the very best condition—deep, mellow and properly drained. This should be particularly the case with small fruits and dwarf trees, which are planted near together, and the roots of which soon extend and fill the whole surface. Large orchards of the apple, &c., may be planted on well-prepared strips of land, and the intermediate spaces cultivated with other crops for a year or two. It is also of the utmost importance that a good selection of sorts should be made. Never buy trees because they are “cheap.” The man who expects to purchase anything, without paying its full price, will commonly find himself mistaken, and there will always be some drawback. It will not be an economical expenditure to buy a hundred apple-trees at five dollars below the market price, and lose half of them because they have been badly grown, badly dug, and are poor, unsaleable sorts; nor more economical to get spurious or cheap sorts and lose fifty times their cost in subsequent years by raising small or unsaleable crops; therefore always procure trees from reliable establishments.

Full directions for transplanting are given on page 50, Vol. I of RURAL AFFAIRS. In cutting back young trees, when transplanted, remember that it is indispensable to do the cutting before the buds expand.

TRANSPLANTING STRAWBERRIES.—Early in the spring is the best season for setting out strawberries. If the work is done well they will bear a moderate crop the same season, and a heavy one the next. The best plants are the well-rooted runners from last autumn. They should be well taken up, so as to secure all the fibres, lifting the roots out with a spade and shaking the earth carefully from them; if pulled severely by the hand the roots will be torn off. The older and dead leaves should be cut off from the plants, and the roots trimmed to about two and a half inches long. For

ordinary field culture they may be set out with a dibble, (fig. 11,) care having been previously taken to immerse the roots in mud to prevent drying. But for garden culture it is better to spread the roots out like the frame of an umbrella, (fig. 12,) and set them in a hole broad enough, with a small mound in the centre on which the spread roots rest, and form a cap, as shown in fig. 13.



Fig. 11.—Strawberry plant, set out with a dibble, or in brella, (fig. 12,) and set them in a hole broad enough, with a small mound in the centre on which the spread roots rest, and form a cap, as shown in fig. 13.

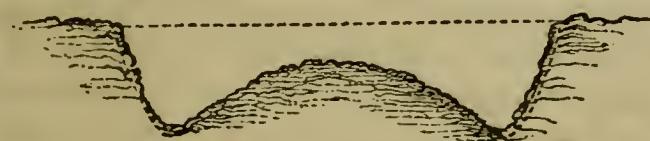


Fig. 13.—Hole, for setting the spread roots of a strawberry plant.

moved as early as possible, if not already done, and the stems placed in position. If this work is left too late, the moist earth in contact with the swelling buds, injures or rots them, and the owner is satisfied, therefore, that “covering does a great deal more harm than good.”

Cuttings of currants, quinces, &c., taken off last autumn, and kept through winter, should be set out early, or as soon as the soil is mellow and dry enough. The earth should be trodden or packed against them from the bottom of the trench, compactly, all the way up, and about an inch left above the surface, which should be mulched with one inch of fine manure.

Root-grafted apples trees should be set out as soon as the ground is in proper condition, and the fruitful source of failure, viz:—a want of the close packing of the soil about them below, carefully avoided. Stock-grafting of apples and pears may be done in the North the first half of the month; and, if the grafts have been kept, without starting, in an ice-house or other

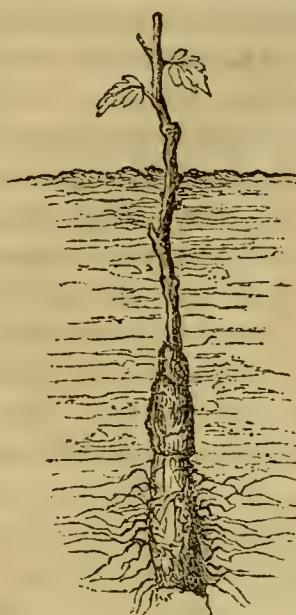


Fig. 14.—Root graft, set out well, with earth compactly pressed against its roots.

cool place, the work may be performed considerably later; but the earliest generally make the best growth the first season. Cherries should be grafted the latter part of the previous month, or not later than the first of the present, and plums not much later.

THE SEEDS OF FRUIT TREES for raising stocks, should be planted as speedily as possible, or as soon as they give the first indications of sprouting. This is especially the case with cherry stones, which, if in good condition, will be found ready to grow the very moment the frozen soil has thawed in which they have been buried. If the different kinds of seed have been pre-

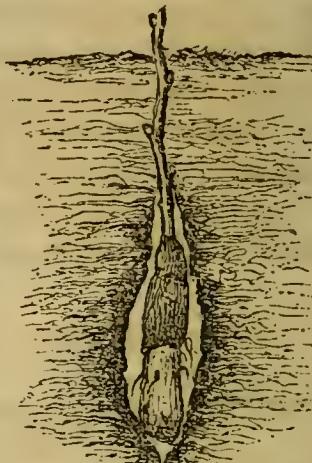


Fig. 15.—Root graft, badly set out, or with a cavity below.

vented from becoming dry, or have been kept moderately moist from the day that the pulp or flesh was removed from them, they will nearly always grow well the first year. But some of them, and especially the cherry, if much dried, will not grow until the second year, if at all. It is most prudent and convenient, therefore, not to plant the seeds of trees until the moment they have commenced sprouting, for then we may be sure they will grow. In order that the young plants may easily find their way to the surface, they should be covered, or partly covered, with fine old manure, fine compost or leaf-mould, instead of strong, heavy soil which may become compact and crusted. Peach-stones may be planted last, as they do not start so soon as the others.

The small mounds that were thrown up late last autumn about the stems of young fruit-trees, to protect them from mice or to stiffen them against winds and shield the roots from cold, may now be levelled down. Autumn manuring and winter mulching should be turned in with the spade. Strawberries, which were covered with chopped straw or other litter, are to be uncovered by raking it off from the plants to the spaces between the rows.

All pruning should be performed before the buds begin to start, if the object is to promote growth or to give a proper form to trees. The only exceptions to this rule are the removal of an occasional distorted limb, rubbing off small shoots to give shape to the heads of trees, pinching in to promote fruitfulness, or lopping in summer to retard a rampant growth. See article on pruning in this number.

Young trees which were budded last summer should have the stocks cut back.

Orchards are sometimes seriously injured by not having sufficient drainage. Even old bearing trees have been much improved by laying tile two and a half or three feet below the surface, midway between the rows, (fig. 16.)

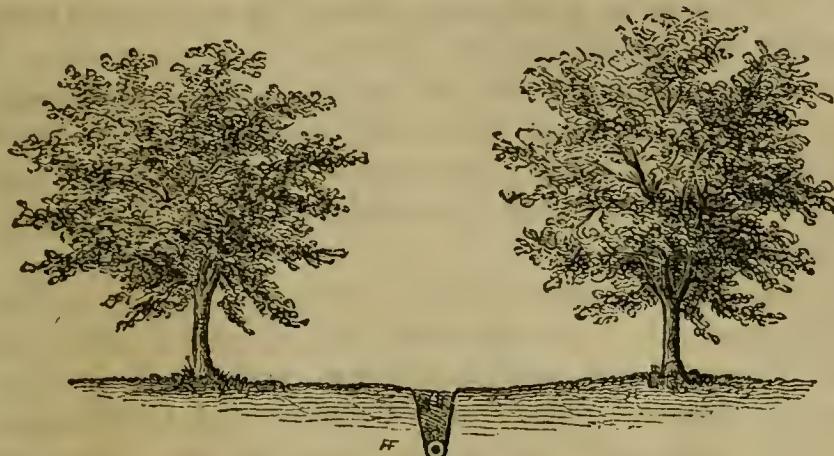


Fig. 16.—*Draining Orchards.*

large roots or filled by smaller ones. This work should be done towards the close of the month or later.

The currant is one of the hardiest and most certain fruit-producing bushes, and for this reason is badly neglected. Good cultivation and pruning will more than triple the size of the fruit. Old bushes should have the old and stunted wood cut out, and thrifty shoots left at regular distances. Old manure should be spaded in about the roots, and the soil kept clean, cultivated and mellow. As the currant starts and expands its leaves very early, this work should be performed as soon as the frost leaves the soil.

Hardy grapes, if not already pruned, may still be cut freely—the “bleeding,” as it is termed, having been found not to injure the vines.

Vines in cold graperies may be uncovered and placed in position. Grape-vines in green-houses will have opened their leaves, and will have formed their bunches in flower; before the end of the month shoots will need pinching in. In forcing-houses the grapes will have already attained their size, and will begin to color before the month closes; maintain a uniform warmth and give air; continue to pinch the laterals.

Well arranged plans for fruit-gardens are given and described on page 271, Vol. I, and page 23, Vol. II of *RURAL AFFAIRS*.

Directions for packing trees for distant transportation are given in the last article of the same volume.

Work for May.

Fruit trees may be still set out with success, if they were dug early in spring, and, especially, if kept from growing, in a cool place. Early-dug trees, however, will do well under careful management, even if the young shoots have commenced growing. If the heads were shortened-in when they were taken up, they will be much the better for it. Serious injury is

The young forming roots being the most remote from the tree, receive the greatest benefit from drains thus placed, and the tile is less liable to be thrown out of position by

sometimes done to young trees, which start slowly, by watering. The leaves not being yet expanded, the water evaporates from them very slowly, and hence to deluge the roots at this time may water-soak them and cause decay. A much better way is to water the stems only, or wet them two or three times a day until the leaves expand. For the only evaporation is from the bark, and, if the tree is wilted in any degree, it would be advisable to tie straw loosely around it, and keep this moist until the bark becomes plump and the buds begin to open. Trees which have been rejected as withered and dead, have been thus soon recovered, and have subsequently made a fine growth the same season.

The earth about fruit trees which were set out last autumn, has now become settled and compact, and it is absolutely essential for the successful growth of the tree that it be now made mellow and loose on the surface, and kept so during the summer. The common opinion that transplanting succeeds best in spring has arisen from the fact that the hard, untouched crust around autumn-set trees is more unfavorable to their growth than the mellower surface about those transplanted in spring.

STRAWBERRIES.—A. M. PURDY, of South Bend, Ind., a successful cultivator of the strawberry, gives the following practical directions for managing strawberry beds for the present month. If adopted, they must be carefully and fully carried out, and no portion omitted :

"We usually pass through our beds about this time with a fork, hoe or potato digger, and loosen the surface of the soil and pick out all weeds. It is then a good plan to scatter a *liberal* quantity of well rotted manure among the vines or 'hills.' After which mulch well—say one inch deep, with sawdust or tan-bark, or clean straw or hay. If any of the readers of this article should have an old bed in which the vines have run together so as to become a thick mat of plants, spade under strips about one foot wide, leaving strips of plants about the same width. Work among these vines with a fork hoe—pick out all weeds and scatter a very liberal supply of well rotted manure among them, over which scatter the mulching.

"To those who think they will not get as much fruit in this way as by leaving the whole mass of plants, I would advise to try the experiment on one part of their beds, and report the result, especially in the size of their fruit.

"After the beds are through fruiting, spade over the ground, leaving narrow strips of plants—say three to four inches wide. Work well among these with the fork hoe—manure *highly*, and as the plants throw out 'runners,' train them along the edges of the rows. Before fruiting season next year, give them the same treatment as before described."

WEEDS.—These will commence growing wherever they can obtain a foothold. They may be destroyed when only an inch high, with only one-tenth the labor required when they have reached a foot in height. Commence

early, therefore, and keep the surface perfectly clear of them, throughout the whole season. Among strawberry plants, currant and raspberry bushes, dwarf apples and pears and other trees set in gardens, the work must be done mainly by hand; but where they have been set out extensively for market, it is performed more effectually and economically by horse labor.

MULCHING may be commenced toward the end of the month, and is applicable to such trees as cannot be worked by horse-power. It consists of a few inches of old straw, cut grass, long manure, tan or sawdust, spread several feet about the tree, and serves to keep the surface of the ground moist. It is especially useful to newly transplanted cherry trees, preventing their burning and withering at mid-summer, after they have started—a common cause of death to these trees. The mulching should be either thick enough to keep the weeds from growing through, or else it should be frequently removed, and the surface hoed mellow and clean. It should be spread broadly



Fig. 17.—Badly mulched tree.

or as far as the roots extend, and not placed in a narrow heap at the foot of the stem, as too commonly practiced, and as shown in fig. 17.

Fig. 18.



TREES IN THE NURSERY, which were budded last summer and headed down early in spring, should be kept rubbed clear of all shoots, except the one from the inserted bud. This work should be done before these shoots make much or any growth, as the removal of much foliage after it has formed always checks the tree. This remark applies with the greatest force to the cherry, next to the pear, afterwards to the apple, and least to the peach. As soon as the young shoot from the inserted bud grows a few inches, it should be tied up to the stump of the stock, (as shown in fig. 18,) which has been

left for this purpose, unless already quite straight and upright. Occasional crooked trees in nursery rows, if young and thrifty, may be made straight in a single season, if tied up to stakes before much of the new wood has formed. This treatment is useful for pear and other valuable trees, but does not "pay" for apple and peach trees.

Mulching is much better than watering, to keep the roots moist—watering in fact generally does more harm than good, by crusting the ground, and never gives a uniform supply of moisture.

EVERGREENS may be set out during the early part of the month, or at any time before much growth is made. The great secret of success in transplanting all evergreens is to remove a portion of earth on the roots. The Scotch Pine may be removed without much risk, and but little additional earth is needed, especially if the roots have been shortened by the spade in previous years, as they are straggling growers. Next to the Scotch Pine are the Balsam and Norway Spruce; but among the more difficult is the White Pine, one of the finest of all evergreens. But failure will scarcely ever occur if the rule is observed to take up a mass of earth on its roots large enough to sustain the tree stiffly in an upright position, when resting on the surface of the ground. All evergreens succeed best when taken from nursery rows where they have been subjected to open-air culture, instead of from dense forests.

THINNING THE FRUIT on overbearing trees may be commenced during the present month. On young dwarf pears it should not be omitted, otherwise the growth will be seriously checked. On older trees, and even in large orchards, it has been found of great consequence, by the improvement in the quality of the fruit which it has effected. In large peach orchards, thinning has been found to improve the crop so much in quality as to triple its price in market, while the increased size has maintained the full amount in bushels. The shortening-back of the shoots described in a previous month, is an excellent way of thinning the peach crop.

VINE HOUSES.—The earliest, or hot-houses, will gradually ripen their fruit. Keep the house dry and well aired, and employ fire in cool, moist weather. Vines in green-houses will begin to swell their fruit—these should be kept sufficiently warm, with plenty of moisture. The laterals should be pinched back as soon as they show indications of crowding.

INSECTS.—As warm weather advances these will increase and become numerous. Destroy them early before they commit serious damage, and before they multiply their numbers. Young caterpillars on orchards may be easily seen before the foliage has become dense, and are more easily destroyed when young. A swab of gas-tar will instantly kill every one it touches. Thin caustic lime-wash also answers a good purpose, and whale-oil soap is next best. Apply soft soap to the lower part of the trunks of apple trees, to exclude the eggs of the borer; and dig out or punch in their holes, all of

these insects which have obtained possession. Aphides, or plant-lice, which begin to cover young leaves, may be destroyed with a solution of whale-oil soap or with strong soap-suds. It may be thrown on with a coarse syringe, but is more effectual where the shoots can be bent over and dipped in the liquid. Towards the latter part of the month the curculio will commence his depredations. There are two modes of destroying it. The first is to destroy the larvae in the young fruit as it falls, and is effected by sweeping it up daily and burning, or feeding it to pigs; or by turning in pigs and poultry to devour the young fruit. The second mode is killing the perfect insect—which is commonly effected by jarring the insects from the trees, on white, spread sheets, as described in former volumes of *RURAL AFFAIRS*. The combination of these two modes is the most effectual, and if applied unremittingly will save any crop. It is only in careless and occasional application that it results in failure.

In all the different modes recommended for destroying insects, it should be remembered that the only certain and reliable ones are those founded in actual *killing*. All attempts to repel, merely, by odors or other influences, are uncertain *at best*, and generally worthless.

Work for June.

Continue the operations recommended for last month, wherever they may be useful or necessary. The growth of weeds should be constantly prevented. Keep the soil perfectly clean and mellow wherever young trees grow. Mulch the surface well around newly transplanted cherry trees, to prevent the common disaster of their dying at midsummer. Mulch other young trees, where the ground cannot be cultivated to advantage; but remember that the best mulching, in most cases, is the coating of fine pulverized earth made by constant cultivation—especially where this can be accomplished by horse power.

Continue to rub off the starting shoots on the stocks of fruit trees that were budded last summer or grafted this spring, and tie up the new shoots where they need it. It is not yet too late to stake young trees in the nursery row, to render them straight, (fig. 19.)

INSECTS, &c.—Continue the destruction of the curculio, as described last month—a common reason of failure is to discontinue this attention too soon, and before all the stragglers have

Fig. 19. have been killed. Watch for the borer at the foot of apple *Mode of staking up* trees, and kill all that can be discovered, whether those that *young trees* have already entered deeply into the wood, or such newly-hatched ones as are found only at the surface. Examine peach trees for the peach-grub; as these always remain in the bark they are easily followed with the point of a knife, and the grub will always be found at the extremity



of their burrow in the bark. Cut off the twigs from plum trees as soon as they show the first indication of the black knot. If this is promptly and unremittingly attended to, trees may be kept quite clear of them, and the operation proves unsuccessful only where it is neglected or left until too late. Aphides should be destroyed when they first appear, as directed last month. Straggling caterpillar nests that have escaped attention should be thoroughly destroyed. The gooseberry and currant worm, or slug, must be very closely watched at its first appearance; it may be killed by a daily application of well powdered, water-slaked, fresh or caustic lime—or better by dusting the leaves with white hellebore—the rain washing it all off before the fruit becomes fully ripe, and thus preventing any danger in using it. Fire blight in the pear is an uncertain and formidable disease—the best remedy is to cut the affected branches far back on its very first appearance, burning or burying the limbs—and to plant out two more trees for every one that dies of this disease.

STRAWBERRY BEDS will bear larger fruit and heavier crops if kept moist in dry weather. This may be effected by regular and moderate irrigation, or by copious watering each evening. Or, on a larger scale, nearly the same result is attained by mulching well between the rows with fine cut grass or soft straw chopped about two inches long.

SHAPING THE HEADS OF YOUNG TREES.—It is now an excellent time to finish a permanent form to the heads of young trees, whether in the nursery row or in young orchards. If done in season, this work may be mainly effected by rubbing off unnecessary young shoots at their first starting, or at most, by cutting them out with a knife, so as to leave them equally distributed and without crossing, as directed in the article on pruning in this number. Thin out unnecessary shoots on young dwarf pears, and pinch off long shoots that are taking an undue lead of the rest. Strong growing grapevines should be well attended to; and unnecessary shoots which cause a dense mass of foliage should be taken out, so as to leave strong ones at even distances. Continue to thin fruit on young trees, where they are likely to overbear, removing all defective specimens and leaving the smoothest. Shorten back the new shoots on the blackberry, to give them a handsome form and to increase fruitfulness.

GRAPE-HOUSES.—Vines in green-houses will now swell their fruit rapidly, and require the completion of the thinning of the berries. Pinch back the laterals wherever they are becoming too long. Keep a mild and damp atmosphere, and use fire heat on cool nights or cold days. Vines in cold houses will bloom—give air freely and keep up the warmth by closing them early in the afternoon.

Work for July.

Continue the operations of cultivating the soil among fruit trees, so apt to be neglected at the present time—mulching where needed—thinning out fruit—rubbing off and pinching in shoots, to give shape to young trees—and thinning out supernumerary branches on grapevines, pinching back canes and bearing shoots that are becoming too long, and thinning the bunches and taking out imperfect berries: Do not pinch the bearing shoots too short, as they bear larger and better fruit when they have a full supply of well-developed leaves to feed them—it is an error to suppose that the sun must shine on the fruit in order to ripen it—the leaves alone perform this office, and quite as well if the fruit is shaded—hence the great point is to furnish the finest growth of leaves and give them plenty of air and light:

Those who wish to propagate a few vines of any particular sort of the grape, may do it most easily by layering. This is easily performed, and

will succeed with scarcely a failure by bending down and burying with a few inches of moist soil, the middle portion of the present year's shoots, (fig. 20.) If the season is very dry, the ground must be mulched to keep the soil moist, and favor the emission of roots. These layers will be furnished with plenty of roots from the joints before winter, when they may be cut from the parent vine and taken up, each layer usually forming two plants.

Continue to pinch back the side and end shoots of blackberries, so as to keep them in a handsome, compact shape, as well as to increase their fruitfulness, and also to prevent the sprawling, straggling growth which is so annoying to those who gather the fruit.

STRAWBERRY BEDS.—Next to early spring planting, the season of partial rest to the plants which occurs immediately after bearing is the best time for transplanting. Take them up carefully, so as not to tear the fibres, cut off all the leaves except those just expanding, keep the roots moist by immersion in mud, and spread them out when setting them. Settle the ground about them by pouring on water, then complete the surface by a covering of fine, mellow earth; next apply a mulching, an inch and a half in thickness, of fine pulverized manure. All, or nearly all, will grow without any further watering; but should the weather become unusually dry, water may be applied without detriment, the mulch keeping the surface moist and preventing the formation of a crust. These plants will immediately grow,

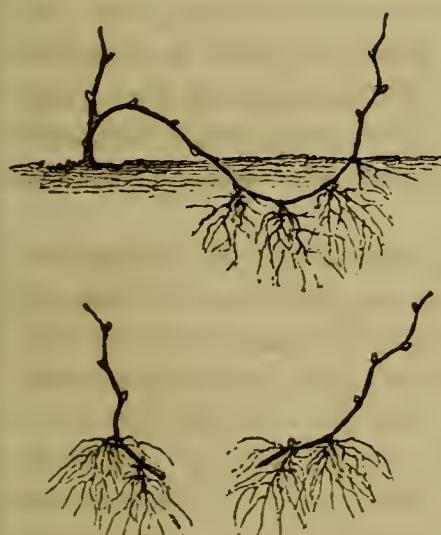


Fig. 20.—*Layering Grapes.*

become well established before winter, and, if well cared for, will bear a good crop next year.

RASPBERRIES.—The old canes may be cut down as soon as the bearing season is over, which will allow new ones more room to become strong. Thin out the new ones, leaving three or four canes to each stool—unless more are desired for new plantations.

WATERING TREES.—It very rarely happens that it becomes necessary to water young trees. If the soil has been kept mellow, it will have retained sufficient moisture; but if neglected, the indications of drouth will be small pale leaves and feeble growth. To impart vigor and restore a healthy deep green to the leaves, mellow the surface thoroughly and apply a mulching of several inches in thickness. In extreme cases, water may be given in addition in the following manner:—remove the earth from above the roots and then pour on tepid water copiously, and replace the soil and then the mulching. But watering, as commonly applied, does more harm than good. It is poured on the bare surface of the earth, and rarely descends far enough to reach the roots—and its only effect is to crust the surface and make it harder than before. Or if, by heavy applications, the water happens to descend to the roots, the earth quickly becomes dry again, and the alternations of wet and dry are of little use.

BUDDING.—This should be performed soonest on such stocks as first form terminal buds and cease growing; while such as continue to grow until autumn may be budded last. Among the first of these is the cherry; and as the buds adhere best as the cambium under the bark gradually thickens, the operation should, in general, be deferred until the terminal buds can be detected as just forming, when no further time should be lost. Plums and standard pears often cease growing soon after midsummer, especially on soils not well adapted to them; these should also be budded early. The Mahaleb, the French Quince for dwarfing pears, and the peach usually continue growing till after the close of summer, and consequently may be budded last. The buds of the peach, however, survive the winter best, when inserted early enough to cause a strong adhesion. Additional directions for budding, with illustrations, may be found on page 60, Vol. I of *RURAL AFFAIRS*.

INSECTS AND DISEASES.—Continue to watch for the peach-worm and apple-borer, and cut out black knots, and cut back fire-blighted branches, as directed last month.

CHERRY STONES, for planting in nursery rows, should be secured when the fruit is fully ripe, by first washing off the pulp and mixing them at once with moist sand. If buried a few inches in the earth and covered with a flat stone, they will keep uniformly moist—better than in any other way. If they are to be sent long distances, they should be dried in the shade a few days to remove the outside moisture only, and to prevent moulding. If allowed to dry several weeks, they can scarcely ever be made to grow.

GRAPE-HOUSES.—Fruit which is now ripening should have a good supply of air, which will improve both the color and flavor of the fruit. Remove crowded shoots and secure a perfect ripening of the wood for next year. Thin the forming bunches in cold houses and remove defective or diseased berries. Guard against cold currents of air.

Work for August.

There is little additional work during this month that has not been already noticed in previous months. Continue the destruction of weeds; keep the ground mellow about young trees; pinch back shoots that are becoming too long in young trees and blackberry bushes; apply mulching to trees suffering from drouth; and transplant strawberries according to directions given last month, remembering that the sooner the work is done the more firmly will they become established for enduring winter and the better they will bear next season.

Continue to watch for insects, and especially for aphides or plant lice, which often increase rapidly during this month. Whale-oil soap, strong soap suds, or very strong tobacco water may be used for destroying them, according to directions already given. Keep a constant eye for black-knot on the plum, and fire-blight on the pear, cutting off instantly the affected parts. Excision will prove a reliable and perfect remedy in case of the former; and frequently, but not always so, for the latter. But it is better to cut away half or even the whole of a tree than to have it wholly destroyed by disease and to allow the malady to spread.

Budding may be continued. Finish up speedily on cherry, plum and standard pear, and commence early with apples. Mahalebbs, peaches and quinces may be budded towards the close of the month. Watch the stocks in season and remove the ligatures as soon as they begin to cut into the bark.

Gather early pears as they approach maturity, but before they become ripe on the tree, and ripen them in drawers or boxes. This will much improve their quality and prevent rotting at the core, so common in summer pears. The proper degree of maturity may be judged in most cases by bending the stem—if the fruit is nearly ripe it will loosen its hold of the tree; but if it adheres firmly the pear has not sufficiently matured. There are, however, exceptions to this rule—the Bartlett, for instance, may be picked even before it has attained full size, and, in a week or two, will ripen into a fine, melting texture and excellent flavor. Ripening summer pears in the dark much improves their appearance. A Bartlett, for instance, fully exposed to the sun and allowed to ripen on the tree, or in a well-lighted apartment, will show perhaps only a light-brown cheek; but, if in a dark drawer, the light-brown will become a beautiful carmine or crimson. When

drawers are not at hand the maturing process may be accomplished on shelves, by first spreadidg a thick piece of woolen cloth, laying the pears on this, and covering them with the same. Pear-growers who send their crops to distant markets, should pack them early enough to reach their destination before the softening process has commenced. Large losses have sometimes occurred from bruising and other injury when sent later.

Work for September.

Complete the budding of peaches and quince stocks, and timely remove the ligatures. See the directions for last month in relation to gathering pears, and pick all valuable fruit carefully by hand.

See that newly set strawberry beds are kept entirely clear of weeds; and, unless intended for new beds, hoe off the runners.

The useless wood in young trees may be pruned out, and a good form given to the heads by any other pruning which may be necessary; as the summer growth being now about terminated, no check will be given to the tree.

Ground for setting out new fruit gardens should be prepared early in autumn, by the necessary plowing, pulverization and intermixture of compost or old manure. It will be in better condition for remaining a few months, and the manure will be more perfectly diffused through the soil than if prepared just before planting time. If the ground is intended strictly for a fruit garden, to be planted either with dwarfs or with small or moderate-sized trees, the roots of which in a few years will extend through every part, the whole surface should be thoroughly plowed, enriched and prepared. But for large apple orchards, where the whole ground will not be occupied for several years, the preparation of strips by plowing, eight or ten feet wide, will be sufficient for the present. Unless the land has a steep slope these strips should be plowed so as to extend directly down hill, and thus assist in effecting good drainage.

The amount of manure to be applied to orchard ground must be judged according to circumstances. In some places it is already rich enough; but, more frequently, a greater or less degree of artificial enriching is important. As a general rule, the leading shoots of young orchards should grow from two to three feet annually; if much less than two feet we may be sure that the soil and cultivation are not good enough; if the growth is more than three feet the wood will be too succulent and be liable to winter-killing. It should be remembered that heavy manuring, in orchards, should never be made a substitute for good, constant, clean cultivation—the latter tending to a more perfect and healthy ripening of the wood than can be effected on any land by manure alone.

Work for October.

TRANSPLANTING.—All young trees which have ceased growing may be transplanted any time during this month. The operation may be performed first with those which drop their leaves soonest; but any tree, by stripping its leaves, may be removed safely. If left on they will invariably cause the shrivelling of the trees in consequence of the large amount of moisture they are always throwing off, and which cannot be restored through the roots while they are out of the ground. Autumn transplanting possesses some advantages—such as the greater length of time allowed for performing the work well—the good condition of the soil, being usually dry enough and easily managed—the opportunity of making the first selection in nurseries—and the more perfect settling of the earth among the roots, through winter—giving the trees an earlier chance to start. The disadvantages are—trees being always rendered tenderer by removal, those which are not perfectly hardy are liable to be injured by the cold of winter—or by sharp cutting winds—or by the stems being blown about and the roots loosened in the soil. These difficulties may be obviated by planting the trees in naturally dry soil, sheltering them from winds, or planting them in sheltered

places, and by staking firmly, or by making small, compact embankments about the stems, (fig. 21.) Another disadvantage from the compact settling of the earth about fall-planted trees is the hard crust of soil which encircles them the following season, retarding their growth. This difficulty is very easily obviated by keeping the ground mellow, as it always should be—a practice never omitted, except by slovenly managers. For more complete directions for transplanting, read “Work for April.”



Fig. 21.—*Mode of banking against newly set trees.*

GATHERING FRUIT.—Autumn pears which are approaching maturity should be gathered by very careful hand picking. Winter varieties should be left on the tree as long as they can remain without danger of freezing. Unlike summer and autumn pears, a great improvement in the flavor will be found to result from hanging late. This is particularly the case with such sorts, as the Winkfield for instance, as require some care to ripen into good quality. Winter pears are found to keep best when placed in a cool cellar. It should be dry enough to prevent moulding and decay, on the one hand; and to have moisture to prevent shrivelling, on the other. Half-barrels have been found convenient for packing and keeping winter pears, and for sending them to market. The former practice of placing them, for a few days, in a warm room with nearly summer heat to finish the ripening process, has not been found so favorable to preserving their best quality as when they are allowed to ripen the natural way in the cellar.

For a convenient mode of hand-picking winter apples, see the directions

for this month in last year's REGISTER. Those who wish to derive a handsome profit from the sale of winter apples, should not only see that the trees are kept in good condition by proper cultivation, and thinning the fruit on the tree when it overbears, but also by carefully picking, assorting and packing in the best manner. A reputation for furnishing fruit of only the best quality, will ultimately be worth hundreds of dollars to every considerable orchardist. He should, therefore, sedulously endeavor to maintain a high reputation for character with the city dealer to whom he consigns his fruit and with the purchasers who consume it. After obtaining such a reputation, his brand, which he should place on every barrel, will not only bring him in higher prices, but will enable him to sell readily all his good apples in those abundant seasons when the market is apt to be overstocked. Poor specimens should never be sent to market, but should be carefully picked out beforehand, and used either for culinary purposes or stored for feeding domestic animals. It will generally be found that the crop of an orchard will sell for more money, after the imperfect or knotty apples are all picked from it, than the whole would bring without assorting.

GATHERING AND KEEPING GRAPES.—The great leading requisite for keeping grapes successfully in winter, is to have them *well ripened*. When grown on crowded, unpruned, uncultivated vines, they will be small, acid, watery, and will quickly shrivel in a dry atmosphere, and mould and decay in a moist one; and they will quickly freeze if the temperature of the air goes much below the freezing point. But well grown and well-ripened fruit, (resulting from good cultivation and judicious pruning,) contains a rich juice which prevents them from shrivelling, decaying or freezing, even at a quite low temperature. Such only, therefore, should ever be chosen for winter keeping. Various modes are recommended for packing away grapes for winter. They all succeed well, if good, well-ripened grapes are taken, as already mentioned, and are placed in a cool and rather dry apartment where they will not freeze. They may be placed on shelves, packed away in small boxes, or placed in larger boxes containing a bushel each, and separating each layer by cotton batting, soft paper or dried maple leaves. They should, of course, be entirely free from moisture when packed away. As a general rule they are not ripe enough unless the stem which holds them has lost its naturally green color and has assumed something of the color of the grapes,—which will be somewhat purple in all dark-colored varieties. One of the best of all keepers among American sorts is the Diana. The Clinton also is an excellent keeper. The Isabella, Catawba and Rebecca keep well.

MANURE may be applied to the surface about young trees where it is desired to accelerate their growth another season. It may lie upon the surface till next spring.

GRAPEVINES in green-houses should have their growing shoots pinched in;

and vines in cold houses, as soon as the fruit is picked, should be thrown open and exposed to the air to finish the ripening of the wood.

Work for November.

FUUIT TREES may be transplanted any time during the present month, when the weather is mild and not freezing. Carefully register in a book the names of every sort in the orchard—this register may be referred to when the trees bear in future years, and the names of the different sorts ascertained, where time has destroyed the labels. If there is danger of young trees being loosened by the wind, stake them or secure them by embanking compactly the earth about them for a foot or two, as figured in last month. This will also protect them from the effects of hard freezing at the roots. Where danger is apprehended from mice, throw up a smooth mound of compact earth around the stems of trees—this will serve as a perfect protection. This precaution is especially necessary for such trees as were mulched last summer or the present autumn for remaining through winter. Such mulching is a good protection in severe climates, but can be safely adopted only where the above precaution is used, as it affords an ambuscade for the mice.

Trees received from a distance may be safely kept through winter by the process of heeling-in described in last year's REGISTER, for this month. If they should accidentally arrive late and in a frozen condition, bury them immediately in mellow earth and the frost will be gradually abstracted from them without injury. If the roots are frozen out of the ground or in contact with the air, they will be ruined beyond recovery.

HALF-HARDY RASPBERRIES may be protected for winter by bending them down and covering them with an inch or two of earth, tan or sawdust, (fig.



Fig. 22.—Bending down Raspberries for covering.

22.) A small mass of earth should be placed against the foot of the stems, over which they may be bent without breaking. Two stools may be bent towards each other, and covered at one operation. A similar covering answers for half-hardy grapes—the wood having been well hardened or ripened, the moist earth will not cause the rotting which occurs with immature buds and wood.

COVERING NEW ROCHELLE BLACKBERRIES.—These are often killed in cold regions. The following mode of covering is described in the COUNTRY GENTLEMAN, by AMOS FISH, of Bethlehem, N. Y.:

"At the approach of winter remove the stakes and lay the bushes at right angles from the rows, flat on the ground, and cover them two or three inches

deep with earth, as follows:—Cut off the limbs within one and a half inches of the canes, at the right and left hand sides of the row, making flat bushes. ‘Shorten-in’ the remaining limbs by cutting off the slender ends; then, with a digging or dung fork, loosen the earth about the roots, and remove some, laying the roots loose on *one side*, so that in laying down the roots shall be bent instead of the canes being broken. When laid down use bricks to hold them down while covering, and remove the bricks when in the way. The bushes should be raised up and the stakes replaced as early in the spring as the frost is out of the ground, which can be easily done with a fork if the rows are laid down singly instead oflapping over one another.”

IN NURSERIES, plow between the rows, turning the furrows toward the trees. Stocks for root-grafting should be taken up and packed in boxes in cellars for winter use. If washed clean and packed in fine, damp moss they will keep well; come out fresh, and not dull the grafting-knife by any grit upon the roots. Scions for spring-grafting of any half-hardy sorts, such as the tenderer varieties of the pear and plum, should be cut before cold weather and packed as just directed for seedlings. All grafts used by nurserymen should be cut late in fall or early in winter, and properly secured in the same way. To avoid mistakes, cut carefully from bearing or proved trees, and let every bundle or package be distinctly marked on at least two labels. Cuttings of French quinces, currants, gooseberries, &c., should be made, and either planted now as directed last spring, protecting with a good winter-mulching; or else packed away in boxes with interposed layers of moss, as already directed for seedlings.

GRAPE LAYERS, made during the early part of the summer, may be now separated from the vine, taken up, pruned and packed away in moss or heeled in the earth for spring planting.

Work for December.

Examine the directions for last month, and promptly complete all jobs not finished in season. Finish the cutting of grafts—apply winter mulching to young trees—top-dress with manure the ground about such trees as need enriching. Collect stakes, sticks, tallies, labels, &c., which are out of use, and tie up and pack them away. Examine the directions for January, and perform any operations which may be required.

GRAPE HOUSES.—In early houses the vines pruned last month will begin to swell their buds. Apply during the present month a regular and moderate temperature. Prune vines in green houses and cold houses, and protect the latter by a covering of leaves.

PRINCIPLES AND PRACTICE OF PRUNING.

A great deal has been said and written on this subject, and a great deal of bad practice still prevails. Orchards are seen all through the country which have either been never pruned, or, if the work has been performed, it has done more harm than good. Trees with trunks trimmed up to three times the proper height, mutilated by the needless lopping of large branches, one-sided and totally destitute of symmetry, or filled with a mass of brush, may be seen all through the country. A perfect orchard is a rarity. The same remark will apply to nurseries. The trees have been grown and trained with very little attention to a perfect shape, the chief object of the owner being to raise large trees in as little time as possible. The purchasers of such trees, after setting them out, either give little attention of any kind, or, if they cultivate them well, allow them to form their own heads as best they can. They may be too tall or one-sided or distorted and irregular, but no attention is given to shaping the heads when they are young and easily and permanently formed. Some of the European nurserymen are more particular, and imported trees, and especially imported currants and gooseberry bushes, indicate the care taken to give a fine shape to the future tree.

PRUNING YOUNG TREES AT TRANSPLANTING.—When young trees are dug from the ground, the roots from necessity are more or less bruised or mutilated. All these bruised or torn surfaces should be pared off smoothly with a sharp knife. If left untouched they induce decay, and are unfavorable to the best healthy growth of the tree—in the same way that a broken or bruised limb above ground would furnish a dead stub or make a bad scar, while pruning it smoothly will cause it to heal over readily. In pruning the ends of the roots draw the knife upwards, leaving the sloping surface on the under side, which will induce the young roots thrown out from the edges of the cut to strike downward in a natural position.



Fig. 1.—Nursery rows—roots extending under the whole surface.

PRUNING THE TOPS.—

Thrifty young trees usually have roots extending as far each way from the foot of the stem as the height of the tree. A careful examination will discover the whole surface of the subsoil occupied with the small fibres of full-grown nursery trees, (fig. 1.) It is obviously impossi-

ble, therefore, in digging up to avoid cutting and leaving most of the roots behind; and the tree when reset is unable to sustain or feed for a time all its leaves and branches. A part must therefore be cut off to restore the balance, corresponding in some degree with the loss of the roots. This may be done by thinning out all the feeble shoots, so as to leave an even, well-shaped head, and then cutting back a part of each remaining one-year shoot,

(fig. 2.) Judgment must be exercised as to the amount thus cut away from the tops. The growth of new roots depends on the assistance afforded by the leaves at the top; if the leaves are too few, the roots will not extend freely; if they are too many, the roots cannot furnish proper supply for them, and they will be feeble and sickly. Planters will learn a great deal on this point by cutting away more or less on different trees, and observing the result. Different kinds of trees require varying management in this respect,—the peach, for example, readily reproduces new shoots, and it may, consequently, be cut back very freely; two-thirds to nine-tenths of each previous season's shoot may be removed without detriment. This peculiarity of the peach allows the removal of larger and older trees than otherwise—such as are three or

Fig. 2—Figure four years of age, if heavily pruned, bear transplanting well.
of thinned and shortened-back The grape, also, may be very heavily pruned, as it throws out young tree. new vines with great vigor. The cherry, on the contrary, is very sensitive, and young trees have been nearly killed by a severe summer pruning. The young cherry shoots should never be cut back in spring more than half their length. The pear and apple are intermediate, and their heads should be moderately and not very severely pruned.

The mutual relation between the roots and leaves has been already alluded to. The leaves cannot exist without the moisture received through the roots; and the roots cannot grow without the nourishment afforded by the leaves. The only exception is the temporary supply furnished by the cells in the body of the tree. New roots are commenced before the leaves expand, as may be seen on young seedlings, or other young trees, the roots of which have been trimmed, and where the white young fibres protrude just as the buds are swelling. The same occurs on the roots of trees transplanted in autumn, after the leaves have fallen; but this effect is only temporary, continued growth requiring that both leaves and roots should work together. On the other hand, the nutriment laid up in the cells will sometimes supply the leaves for a short period, provided care is taken to furnish the requisite moisture at their surfaces by means of a bell-glass, to retain a damp atmosphere. Cuttings are often thus started, a small portion of leaves being allowed to remain upon them to assist in the emission of new roots. But, if the leaves are placed in a dry air, they soon pump out and

carry off the moisture, and the shoot, leaves and all, within a short time. If all the leaves had been cut off, the shoot would remain plump much longer—a fact well known to nurserymen and others who preserve scions for budding plump by the prompt removal of the leaves.

PROPER TIME FOR PRUNING.—Many cultivators have been misled into the opinion that early summer is the best time to prune, from the fact that the wounds heal more readily. Pruning after the tree has commenced growth

has a tendency in nearly every instance to check the vigor of the tree. For this reason, where the rapid formation of young wood is desired, the work must be performed before the buds begin to swell. Some planters have objected to shortening-in the shoots of newly-set trees, because by doing the work too late, or after the leaves were partially or wholly expanded, they have injured and not benefitted them. Any one may easily satisfy himself on this point by pruning back the heads of a dozen trees early in the season, and leaving those of another dozen

Fig. 4.—*Head of young tree pruned after the leaves had expanded.*

until the leaves have opened. They will present the appear-

Fig. 3.—*Head of young tree pruned before the leaves had expanded.*

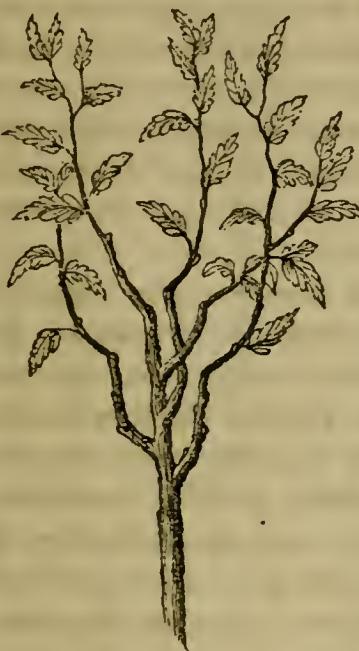
ance represented in the annexed figures, before the close of summer—the first, (fig. 3,) with strong, thrifty shoots; the latter, (fig. 4,) with short, stunted growth.

There may be an exception to this general rule, where a slight amount of pruning in summer, not sufficient to produce any material check in growth, may be useful in improving the shape of the tree; such, for example, as the removal of an occasional, unnecessary shoot or one-sided branch.

As fresh wounds always render trees more liable to be affected by intense cold, quite hardy trees only may be pruned any time during winter. On those inclining to be tender the operation should be deferred till towards spring.

PRUNING, AS AFFECTING FRUITFULNESS.—As a general rule, the rapid formation of leaves and wood is adverse to the production of much fruit. On the other hand, the slow growth of the wood favors the formation of fruit-buds and the production of heavy crops. These two adverse tendencies may be more or less controlled by pruning.

When the too numerous branches of a tree produce more leaves than can



be properly supplied with nourishment, resulting in a feeble or diminished growth, new vigor may be often imparted by judicious pruning, directing the sap into a smaller number of channels, and thus increasing its force; for example—peach trees, after bearing some years and yielding smaller fruit than on fresh young trees, will assume all their former thriftiness by partly cutting back, and thinning out the heads. Dwarf pear trees, which have not been sufficiently manured and cultivated, whose pruning has been neglected, and heavy bearing allowed for a number of years, have been restored by severely pruning back the branches and thinning out the fruit spurs. In all such operations as these, it is indispensable to observe the rule already given to do the cutting-back in winter or early in spring, before the buds have swollen. If trees are too thrifty and do not bear, a check may be given, and many of the leaf-buds thus changed to fruit-buds by a continued pinching-back during summer.

GIVING DESIRED FORM TO TREES BY PRUNING.—A tree may be moulded into almost any desired form by a proper use of the knife, or even by the

rubbing and pinching process. If a young tree from the nursery is too tall and slender, or has too high a top, it should not be altered much the first year after removal, but allowed to become tolerably established with its new set of roots. The second year it may be cut back freely, (figs. 5 and 6,) taking care to leave buds for the formation of an evenly distributed head. Some kinds of trees will bear cutting back freely the same year they are removed, as, for example, the peach, which, as already observed, readily produces new shoots. The same characteristic is possessed by the sugar-maple and some other trees, which, as many have observed, when planted along the borders of streets, and cut back to single poles, form heads at once of new branches.

When the tops are too low (which is rarely the case,) the lower branches may be pruned off and the top carried up to any desired height. This should not be done until the stem

Fig. 5.—Mode of has thickened sufficiently to sustain the top—
reducing the height of a tall the side-shoots always tending to increase the diameter of the stem which bears them. If the operation dotted line. the young tree possesses great luxuriance it is completed.

may be desirable to throw more of the growth upward than these side shoots would allow, if remaining till the following spring, the usual time for pruning. In such a case the ends of the side limbs may be clipped or pinched off, and a portion of the lower ones removed with the knife.

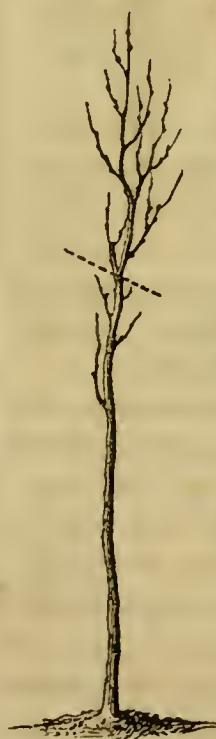


Fig. 6.—The same, after the operation is completed.

PRUNING NURSERY AND YOUNG TREES.—Brief suggestions have been already furnished on this subject in connection with the explanation of general principles. Directions of a more minute and practical character, and applicable to the different kinds of trees, will doubtless be useful and acceptable. It is of great importance that a tree be pruned right, on the start; for the misplaced shoot, which might be easily rubbed off with the finger, when just beginning to grow, may ultimately become the heavy limb and the misshapen top.

PRUNING SINGLE SHOOTS.—

Young shoots are cut back for various purposes, such as cutting down to an inserted bud, shortening-in those that are too long, or cutting out supernumeraries. It is important that even these simple operations be rightly performed. 1. The cut should always be made with a sharp knife,

which does the work smoother, Fig. 9.

Fig. 10.

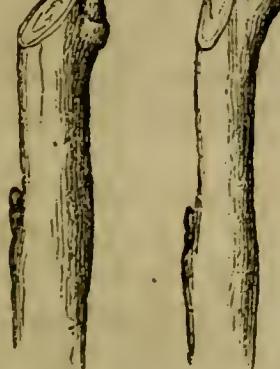


Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.

better and more completely at the control of the operator. 2. The cut surface should be as small as practicable, in order that it may heal over readily. The two annexed figures show the right and the wrong way of doing this work, fig. 7 being a well-made cut, and fig. 8 being one performed by a careless workman, exposing a large cut surface and leaving an inconvenient and sharp stub above the bud intended to grow. 3. The cut should not be made too far above the bud, nor too near it. If too far above, (fig. 9,) in the space between the buds or joints, this portion, not being fed by leaves, dies, and the wood must be afterwards pruned again in order to make a smooth stem. If the cut is made too near the bud, as in fig. 10, the drying surface abstracts moisture and enfeebles the bud, which either fails to grow or grows feebly. Trees that

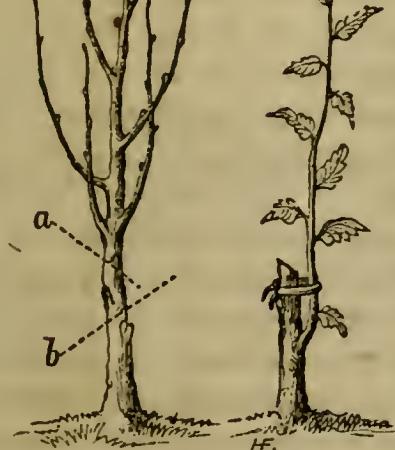


Fig. 11.



Fig. 12.

Fig. 11—Pruning down to inserted bud—the dotted line a, shows the proper place to make the cut—b is too near the bud.

Fig. 12—The bud after starting and tying up.

are soft and porous, as the peach and grape, should have more wood left above the bud, to prevent drying; and in pruning down to all inserted buds, it is generally safest to leave an inch or two until the young shoot has fairly commenced growing, when the

stump may be pared down close to it by a single draw-cut of a sharp knife, made side-wise, so that the point of the knife may not strike the shoot, (figs. 11 and 12, p. 169.) 4. In shaping the heads of young trees, prune down to an *inside* bud, where an upright shoot is required; but prune down to an *outside* bud where a more horizontal or spreading growth is sought, as, for instance, in such vertical growers as the Northern Spy and Early Strawberry apple trees.

PRUNING YOUNG APPLE TREES.—Directions have been already given in relation to forming a high or low top. In consequence of the crowded growth of nursery-trees, they are apt to push upward to reach the light, at the expense of the side-branches. In addition to this influence, being closely trimmed on the sides to make them tall, such mismanaged trees assume the appearance of the annexed cut, (fig. 13,) and have been compared to a low-bowing French dancing-master. A better-shaped tree is shown in fig. 14.

As all nursery trees succeed better, are more sure to live, and are more vigorous and make handsomer trees when set out quite young, or at not more than two years from the bud or graft, the following directions apply to such trees at the time of planting and immediately afterwards. Three or four side-shoots on the unform-

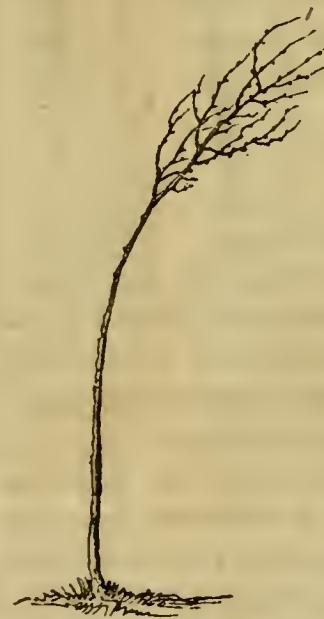
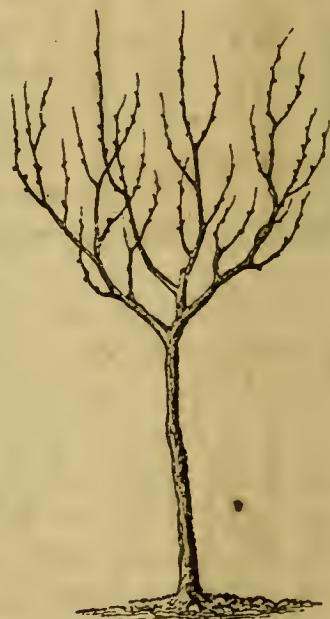


Fig. 13.—Nursery tree pruned too high. Fig. 14.—Well formed young tree.

selected, to form the main branches and to constitute the foundation or frame-work of the future top, (see fig. 2 of this article.) In order to secure a well formed and nicely balanced head, these shoots must be frequently watched through the first summer of growth, and if any of them are disposed to take the lead of the others they should be pinched and checked to maintain an equality. Two buds will be enough to grow on each of these shoots, making eight at the end of the season, taking care that all are distributed at equal distances, (fig. 17, p. 171.) All the other shoots should be rubbed off with the thumb and finger as soon as they form. The second year the same process is repeated on the new shoots, and continued until a handsome, even, symmetrical frame-work for the future head is obtained, after which comparatively little attention will be necessary. A large orchard



of young trees may be managed in this way with a very few days' labor—far less than that afterwards required in cutting out large limbs and giving shape to the distorted tops of full-grown, neglected orchards. These rules will apply, substantially, to the pruning of standard pears, except that they generally require less thinning out.

Nearly the same course is to be pursued in forming the heads of dwarf apple trees, with the exception that the base of the head should be only about ten inches from the ground, (fig. 18;) or if they be half-standards on Doucain stock, the heads should be about twenty inches or two feet high.

Full directions for pruning the dwarf pear may be found on page 56 of RURAL AFFAIRS, Vol. I, and on page 43, Vol. III of the same work.

PRUNING THE PEACH.—No tree requires continued pruning so much as the peach. There is a strong tendency in the terminal buds to push upward and outward,

at the expense of the side-shoots, which soon dying, the tree ultimately is composed of long, bare poles with only tufts of leaves at their extremities, (fig. 19, p. 172.) It is well known that young trees bear large, handsome and excellent fruit, while the old, enfeebled trees yield nothing but small specimens of inferior quality. Continued pruning will prevent this bad result, and preserve

Fig. 15.—Uniform-

ed tree.

III of the same work.



Fig. 16. — Unformed tree, left unpruned till older.

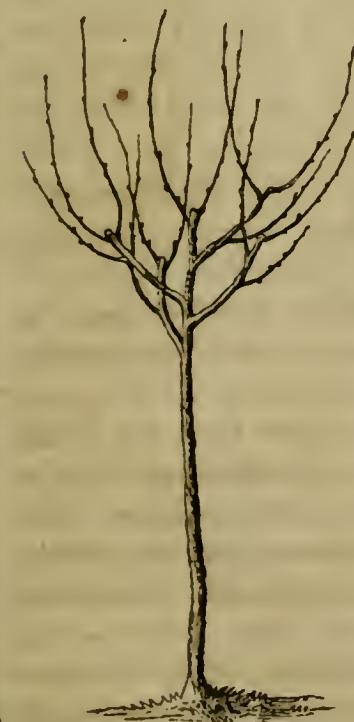


Fig. 17.—Well formed head.

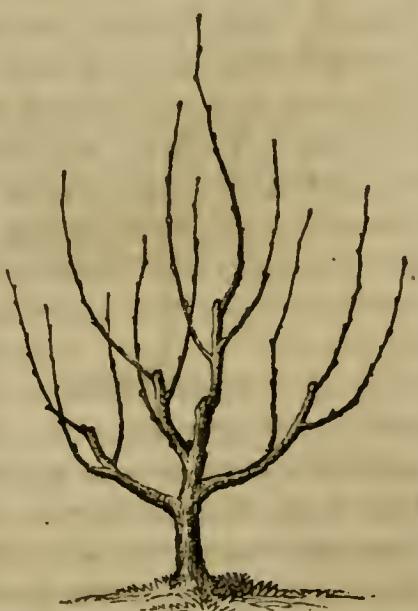


Fig. 18.—Dwarf Apple.

No. 19.—*Neglected Peach Tree.*

the heads of old trees in a state of thrifty growth, and they will continue to yield as large and fine fruit as on the first years of bearing. As the peach always bears its fruit on the previous year's growth, and buds never start from old wood, it is important to keep a continued supply of young wood, evenly distributed throughout the head. This can only be done by continued cutting back. The best way to perform this operation is to commence at the close of winter or early in spring, and cut off the upper half or two-thirds of every one-year shoot. If this process is continued from year to year, in connection with cutting entirely out all the feeble shoots where they grow too thickly, the desired object will be fully attained, and the trees, as they grow older, instead of presenting the appearance of fig. 19, will form the

round, symmetrical, evenly distributed heads shown in fig. 20. An important advantage of thus pruning the peach will be the thinning out of the fruit-buds; and while the tree will bear perhaps only one-third or one-quarter the number of specimens, they will be so much larger as to give as many bushels, while the quality will be incomparably superior.

An objection is made that too much labor is required for this operation. By the use of a good pair of pruning-shears, however, it may be done with great expedition,

and a half a dozen trees finished in the same time that would be required for a single tree in using the knife.

Another mode, more rapidly performed, and answering nearly the same purpose, is to cut off two or three years' growth at a time, from all the longer branches, taking care to leave a sufficiency of young wood, and always cut-

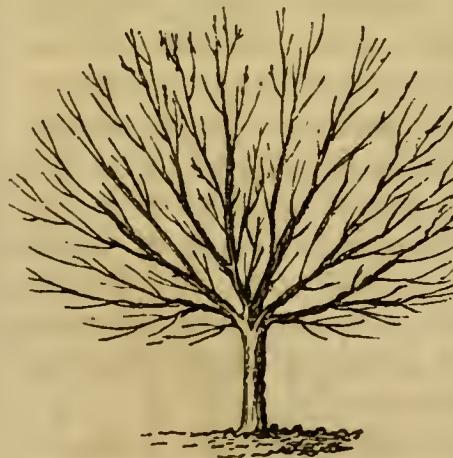


Fig. 20.



Fig. 21.

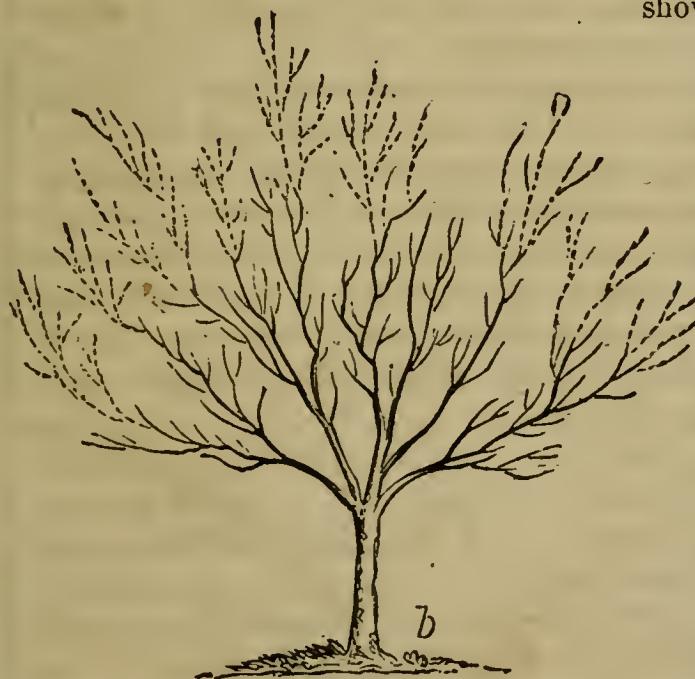


Fig. 22.

ting back to a fork, so as not to make a dead stub.

In cases where the pruning has been neglected on young trees, until they have attained several years of age, and the shoots have just begun to die out in the centre, a still more wholesale kind of pruning may be adopted. Three or four feet may be taken off, in cases of necessity, at a single stroke, and if judiciously performed, will convert the broad head which is beginning to become enfeebled, into a smaller, neat, round and open head, possessing all the thriftiness of a young tree, and bearing as large and excellent fruit. Fig. 21 shows the tree before being thus cut back, and fig. 22 the same, with all the ends of the branches, shown by dotted lines, removed.

It must be remembered here, as in all other instances, that the outer shoots must be sufficiently *thinned-back* to admit light to the interior. The shearing, which is sometimes adopted, like that of a common hedge, only thickens the foliage on the outside, and increases instead of diminishing the evil.

PRUNING THE CHERRY.—

The cherry, usually, needs but little pruning, after the young tree has been properly formed. As wounds made in winter are apt to form gum, and the removal of much foliage in summer injures the tree by checking its growth, the rubbing and pinching process should be exclusively resorted to, in forming an even and well-distributed head, nearly after the same manner

as already described for the apple. The only care, as the trees become older, is to see that no shoots, by outgrowing the others, form a distorted top.

Nearly the same rules apply to the plum; but as single shoots sometimes make a long growth in a single season, an eye must be kept to them, and the necessary rubbing and pinching performed, that they do not outgrow the others.

PRUNING THE QUINCE.—Brief directions are given on page 290, Vol. III of *RURAL AFFAIRS*. In addition to these hints, we may here remark that young quince trees, as sold by nurserymen in this country, have, in most instances, received no pruning or training, and resemble fig. 23.

To give them a single straight stem and to impart sufficient vigor to form a good well-balanced head, such trees should be cut down near the ground as soon as they become well established, and a single upright shoot allowed to grow for the future tree, (fig. 24.) The second year a good head may be commenced, according to the directions given for the dwarf apple.

PRUNING THE RASPBERRY AND BLACKBERRY.—Full directions for the raspberry, with illustrations, are given on page 285, Vol. I of *RURAL AFFAIRS*.

Fig. 23.—Unpruned Quince. Pruning the blackberry is commonly but little understood. We hear frequent com-

Fig. 24.—*The same, cut back and new stem formed.*

plaints of the rambling and straggling growth of this bush, &c., extending across alleys, tearing dresses, at the same time proving unproductive. This is all owing to a neglect of summer pruning. As soon as the new shoots have reached three and a half feet in height, the ends should be pinched off with the thumb and finger, which will cause the protrusion of laterals. These in turn are to be pinched off when they have grown eighteen inches. It will be necessary to pass along the

rows every two weeks in doing this work, as new shoots will be constantly thrown out during the entire summer. The



Fig. 25.



Fig. 26.

plants being thus kept within bounds, will present the neat, compact and productive bushes shown in fig. 25, instead of the unproductive stragglers, if left untouched, represented by fig. 26.

PRUNING THE GOOSEBERRY AND CurrANT.—In the culture of the gooseberry and currant three distinct modes are adopted. The first, which is quite common in this country, is to plant the bushes along garden fences, where they often grow up with grass, and, being neither cultivated nor cared for, the fruit becomes small and of little value. This is the worst mode.

The next is to cultivate, but not prune them. The fruit on such bushes is fine while they are young, but as they become filled with a profusion of old bearing wood it becomes diminished in size.

The third and best mode is to give them good, clean cultivation and to keep up a constant supply of young bearing wood, yielding large and excellent crops.

The currant and gooseberry, like the cherry, bear their fruit on shoots two or more years old; and it is important that a succession of strong young shoots be maintained for this purpose. The branches of the heads should therefore be distributed at equal distances, and the old bearing spurs cut out when they become too thick or enfeebled, and new shoots allowed successively to take their place.

When the young gooseberry or currant bush is set out, all the buds or suckers below the surface of the ground should be previously cut off clean, so as to form a clear stem. It is often recommended that this stem be a foot high before branching,—which does well for the moist climate of England; but under our hot suns it is better that the branches begin near the surface of the ground.

Old currant bushes, such as have grown up to a thick mass, may be greatly improved, and will increase the fruit several times the size, by thinning out clean all the old crooked wood, and leaving a sufficient number of young stems at equal distances, to bear the future crop.

The English gooseberry, in this country, will remain free from mildew only so long as it is kept in a vigorous growing condition by frequent and judicious pruning, so as to give a constant succession of strong shoots.

PRUNING OLD TREES.—As already shown, trees well managed when they are young need very little pruning after they become old. But there are many orchards which have been neglected; and these may be much improved by judicious management. In the first place, it will be best to say how they ought *not* to be pruned. The accompanying figures represent specimens of badly mutilated trees, spoiled by a process called trimming—and done with the axe or saw, as was found most convenient. This mode has formerly been very common throughout the country; and the leading principle of the operation, so far as there is any principle connected with it, was to cut off all the limbs within the reach of the operator, and which should have been left to form a round, handsome head,—and leaving the tallest or most remote portions which were beyond his reach, and which perhaps should have been shortened-in or brought down. Fig. 27, (p. 176,) is termed a



Fig. 27.
Sprawling and two-story trees.

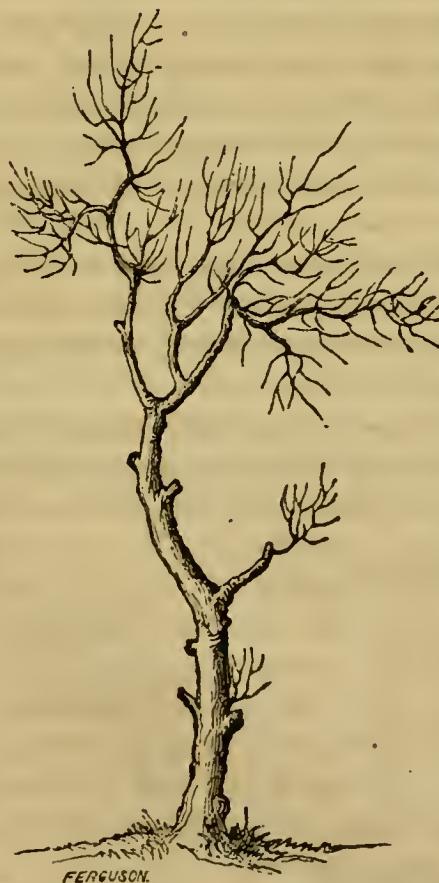


Fig. 29.—Orchard tree badly pruned and made into a three-story tree.

ROOT PRUNING.—This is sometimes done to check the growth of trees and produce fruitfulness—in the same way, but in less degree, that transplanting produces a like result. It should usually be done early in spring, and with a

sprawler; fig. 28, a two-story tree; and fig. 29, a three-story one. This ruinous mode of pruning has been frequently adopted in re-grafting large trees, the grafts being set far enough up towards the clouds to secure small limbs for their insertion; a better mode is to graft the uppermost and central portion the first year, after having been properly cut back; the middle, the second year; and the lower and exterior part of the top, the third

year. If there are not enough small branches for the insertion of the grafts, cut back in winter or early in spring, and new shoots will be emitted, which may be easily budded or grafted. In cutting back, avoid, if possible, the removal of very large limbs, that the wounds may not be too long in healing over. To prevent the parts from decaying, apply to the cut surface, after it has dried a few days, a coating of thick ochre paint, a thick solution of shellac in alcohol, or a warm mixture of fine sand or brick-dust with gas-tar. These wounds heal much more readily if the pruning is done after the tree is in leaf; but, as has been already explained, trimming at this season seriously checks the growth. It should be resorted to, therefore, only where the trees are in a thrifty condition, and where but a moderate amount of pruning is required—and never, in any case, for the formation of a new top in old trees.

spade ground sharp and kept solely for this purpose, so that the roots may be cut off smoothly, and not torn or bruised, as with a dull spade. Any required degree of check may given to the tree by cutting the roots short or near the foot of the stem—a less check by allowing greater length.

PRUNING THE GRAPE.—The previous volumes of *RURAL AFFAIRS* have furnished articles on pruning and training the grape, as on pages 194 and 280 of Vol. I, page 313 of Vol. II, and pages 120 and 212 of Vol. III.

Strong-growing American sorts require more room than cultivators generally have given them, although the limited space has succeeded well for a few years while the vine is young. The dwarfing system of *BRIGHT*, which attempted to keep the vines within a very narrow space, has proved a failure, after a few years growth of the vines. The Cincinnati vineyards, where the Catawba is trained to single stakes and allowed a space of only four feet, do not furnish such large bunches, nor such heavy products, as where the vines in the same neighborhood are allowed to extend more freely on a trellis. The remark has been often made that where the Isabella is allowed to ramble extensively on trees, it yields better fruit than if cramped on a small artificial structure, without being properly cultivated and pruned. As an appendix to the articles already alluded to, the following description of the management of Dr. *UNDERHILL* and his brother, W. A. *UNDERHILL*, at Croton Point, may afford some interesting suggestions to grape culturists:

The vines are trained on wire trellis, about eight feet high, supported mostly by chestnut posts, but some by locust. Since timber has become costly, the posts are placed about twenty feet apart; and the vines being about ten feet apart in the row, two occupy the spaces between the posts. Three wires are used, the upper being eight feet high, and the other two about two and a half feet apart, leaving a space of three feet next the ground.

This space is considered essential to the proper circulation of the air. A less height for the trellis was found to cramp unnaturally the growth of the Isabella vine; and by raisng the trellis from six to nine feet, the product of

the vine was doubled. A light stool ladder is used for gathering the upper branches.

The mode of training—the result of many years experience—is exhibited in the annexed sketch, (fig. 30.) The two upright branches of the vine are permanent, and remain as long as the vine lasts, unless accident or injury should require the removal and renewal of one of them. A horizontal cane is trained along

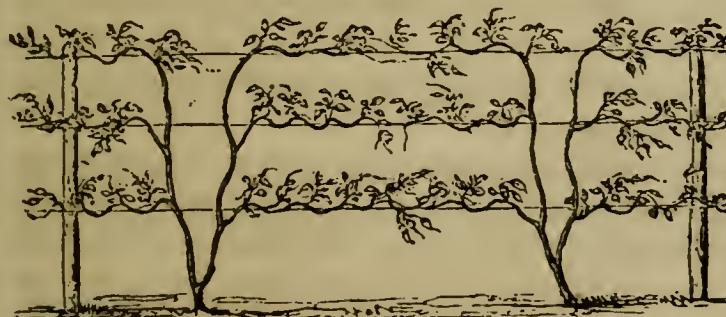


Fig. 30.—*Isabella grape, as trained at Croton Point, as seen early in summer, after the second thinning, and before the shoots have made much growth.*

each wire, and is commonly renewed every year, bearing shoots growing on last year's wood. These canes furnish the fruit-bearing shoots, which are commonly thinned out so as to be from ten to fifteen inches apart. They are allowed to grow their full length, without being stopped, unless it be the first of autumn, and commonly attain a length of some three or four feet. The weight of the fruit ultimately gives them a drooping position. The space between the rows or trellises is commonly eight feet; on rich land a greater width is required, and on a poor soil less will answer. W. A. UNDERHILL informed me that a fertile soil is by no means desirable, causing too great a growth of the vine, less productiveness, fruit inferior in flavor, and a greater liability to winter-killing; while more room than is profitable must be given to the vines. He would never plant a vineyard on land that would produce more than fifty bushels of corn per acre, and less would be better. He has some good vineyards on soil that would produce only about twenty bushels per acre. Nearly all the soil here is quite light, being primitive sand and gravel—he thinks on the strong rich soil of Western New-York the trellises should be at least twelve feet apart. The warmth of his soil may be judged by the fact that last year he raised seventy bushels of sweet potatoes, and that some years ago he loaded twenty sloops with water-melons from thirty acres. Both he and the Dr. have found little or no advantage in deep sub-soiling, the increased growth being rather a detriment. The great requisite appears to be to keep the soil constantly stirred and mellow, by passing the harrow or cultivator through, after every considerable rain.

Dr. UNDERHILL informed me that his routine of work had been about as follows:—His men commenced trimming soon after the middle of winter, and continued, as the weather admitted, until the frost was out of the ground in the spring. The spaces between the trellises can then be plowed, throwing the earth towards the centre and away from the vines, and running the plow rather shallower as it approaches them—although tearing the roots slightly is considered no disadvantage. Plowing the earth away from the vines is regarded as favorable to the admission of the warm rays of the sun. He showed me a vineyard, planted on sloping wet ground, which did not succeed well; but placing a tile drain three feet deep, midway between the trellises, has made it an excellent vineyard.

Some of the vines in these vineyards are thirty years old, and are three or four inches in diameter. They improve in value with age, or at least they have done so up to the present time.

Dr. UNDERHILL has a fine grape avenue over one of his carriage roads, made by erecting posts sixteen feet long, or twelve feet above ground, and sixteen feet apart. Wires are stretched across from the tips of these posts, and support horizontal vines. On one side a vine is planted at the foot of each post; on the other, a branch at each post is brought from the adjacent common trellis. The annexed cut, exhibiting a single pair of these posts,



Fig. 31.—*Grapes trained in an avenue over a carriage-way approaching the residence of Dr. Underhill, at Croton Point.*

(fig. 31,) serves imperfectly to represent the appearance of this avenue. Where the ground is rather rich it is found useful thus to give the adjacent vines a chance to extend themselves; and W. A. UDERHILL showed me where he had in a similar way extended the vines over the

strip of land on which the horses turned in cultivating it. The grapes thus obtained over this otherwise vacant piece of land, amounted to sixty dollars in a season.

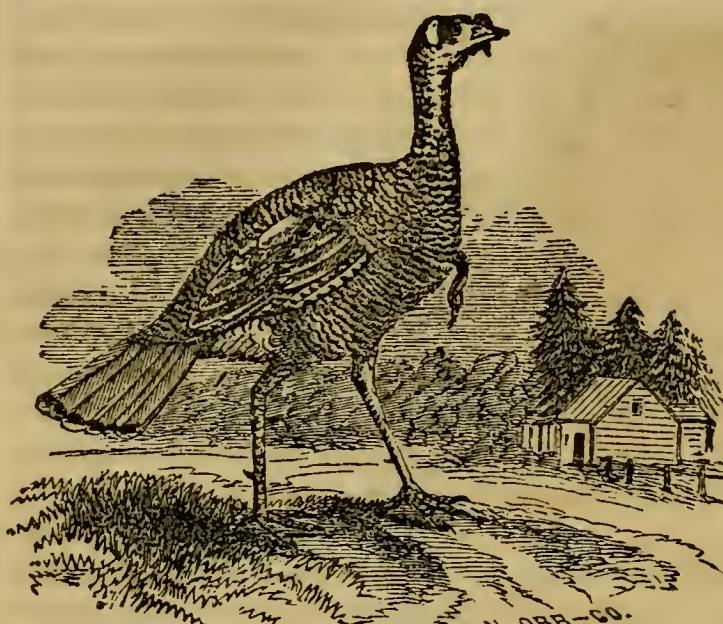
I should have remarked, when speaking of the mode of training adopted here, that the horizontal mode is believed to be by far the best, and favoring great productiveness in connection with moderate growth. As the soil is never uniform over a whole field, and plants differ in vigor, some discretion must always be exercised in training and thinning. If the shoots are rather feeble, more thinning is required; and where last season's canes are unusually luxuriant, they are twisted around the wires early in spring—the apparent cracking or breaking in performing this work never injuring them. In cases where the horizontal canes have not made sufficient growth, the older wood is allowed to remain for a time.

THE TURKEY—ITS HISTORY, &c.

[Written for the ANNUAL REGISTER, by C. N. BEMENT.]

The turkey is the most recent, and, except the hen, the most valuable of domestic birds. It was unknown before the discovery of America by Fernandez. It is indigenous to this country—a real Native American. It is one of those fowls that as yet are found in a wild as well as in the domestic state. How long this may be is a mystery; probably not long, for as civilization and improvements advance they will doubtless share the same fate as the Indian and Buffalo.

BUFFON remarks, "as the turkey was unknown before the discovery of America, it has no name in the ancient language." The Spaniards called it

Fig. 1.—*The Wild Turkey.*

pavon de las Indias—the peacock of the Indias—because its tail is like a peacock.

The natural habitat of the wild turkey extends from the north-western territory of the United States to the Isthmus of Panama, south of which it is rarely found. In the states of Michigan, Ohio, Kentucky, Illinois and Indiana, they were more abundant than at present, but

like the Indian and buffalo, they have been compelled to yield to the destructive ingenuity of the white settlers, often wantonly exercised, and seek refuge in the remotest parts of the interior.

AUDUBON observes;—"The great size and beauty of the wild turkey, its value as a delicate and highly prized article of food; and the circumstance of its being the origin of the domestic race, render it one of the most interesting birds indigenous to the United States of America. The flesh has an excellent flavor, being more delicate, juicy and highly-prized than that of the domestic turkey. The Indians value it so highly that they term it the white man's dish."

The plumage of the wild turkey is generally described as being compact, glossy, with metallic reflections; feathers double, as in other gallinaceous birds, generally oblong and truncated; tips of the feathers almost conceal the bronze color. The large quill coverts are of the same color as the back, but more bronzed with purple reflections. The lower part of the back and tail feathers are of the same color, undulating, barred, and minutely sprinkled with black, and having a broad blackish bar towards the tip, which is pale-brown and minutely mottled; the under parts duller; breast of the same color as the back, the terminating black band not so broad; sides dark colored; abdomen and thighs brownish-gray; under tail coverts blackish, glossed with brown, and at the tips bright reddish-brown.

The plumage of the male is very brilliant; that of the female is not so brilliant or so beautiful. When strutting about with tail spread, displaying itself, this bird has a very stately and handsome appearance, and seems to be quite sensible of the admiration he excites.

Dr. BACHMAN says that "in a state of domestication, the wild turkeys,



Fig. 2.—The Domestic Turkey.

requires the greatest care in the first months of its existence. When once reared, however, every temperature seems to agree with it.

To describe the domestic turkey is superfluous; the voice of the male, the changeable colors of the skin of the head and the neck, his proud strut, with expanded tail and lowered wings, jarring on the ground; his irascibility, which is readily excited by a red or scarlet color, are points with which all are conversant. Turkey-cocks are pugnacious and vindictive, and ill-treat the hens. They have been known to attack children; and combats between them and the game-cock have taken place, in which the latter was more oppressed by the weight of his antagonist than by his gladiatorial skill; in fact the bulkey hero has been worsted, as he cannot use his spurs with the address exhibited by the game-cock, which, moreover, fights with method.

The antipathy which the turkey-cock entertains for anything of a red color is well known; and, indeed, will never be forgotten by the writer, who at about the age of eight years, having on a red flannel garment, was chased by two of them around a very extensive yard to our most terrible affright and discomfiture.

The adult turkey, it is well known, is extremely hardy, and bears the rigors of our coldest winters with impunity, even in the open air; for, during the severest weather, flocks will frequently roost at night upon the roof of a barn or the branches of tall trees, preferring such accommodations to in-door roosts. The impatience of restraint and restlessness of the turkey render it unfit company for fowls in their dormitory; in fact, the fowl-house is altogether an improper place for these large birds, which require

though kept separate from tame individuals, lose the brilliancy of their plumage in the third generation, becoming plain brown, and having here and there white feathers."

THE DOMESTIC TURKEY.—We have spoken of the turkey of nature; we will now treat of the turkey of art—that is the domestic turkey, that makes so interesting a part of our rural economy. They are, next to the common fowl, the most important, useful and valuable of domestic birds, and at the same time that which re-

open sheds and high porches, and altogether as much freedom as is consistent with their safety.

Although turkeys will roost, even during the winter months, on trees, it is by no means recommended that this should be allowed, as the feet of those birds are apt to become frost-bitten from such exposure to the air, on the sudden decline of the temperature far below the freezing point. It must be remembered that the domestic turkey, hardy as it is when adult, is not equal, in point of endurance, to its wild relative, bred in the woods and inured to the elements.

Turkeys are fond of roaming about pastures, fences and the borders of fields; they love to visit turnip patches, where, besides the leaves of the turnips, which they relish, they find insects, snails, slugs, etc., which they greedily devour. They feast on grasshoppers. In the morning they should have a good supply of grain, and after their return from their wanderings another feed. By this plan not only will the due return home of the flock be insured, but the birds will be kept in good store condition and ready at any time to be put upon fattening diet. Never let them be in poor condition—this is an axiom in the treatment of all poultry—it is difficult, and takes a long time to bring a bird into proper condition which has been penitiously fed or half-starved.

To the careful observer its habits are interesting, although somewhat eccentric; and what is greatly in their favor, the more we study these habits the more we are pleased with them. There is one trait in the male that is never unobserved. His shouts of exultation when surrounded by female companions, and when calling together their broods of young, may sometimes be heard half a mile. It is wonderful to observe how the little progeny will respond to his voice, if at a distance of twenty or thirty rods in the rear, as led by him in their daily explorations for food, and especially at the close of day, when returning for repose at their usual place of rendezvous and spending the night. It cannot be denied, however, that in this latter respect turkeys are deficient in punctuality, and are sometimes overtaken by night before reaching home. If so, they make an encampment wherever they happen to be. But this is not the result of indifference to home, but a defect in the science of geometry, not remembering how far they have wandered from it, or to a deficiency of astronomical observation, not having observed how rapidly time had sped.

The well-fed male turkey, especially if rendered sociable by a numerous family of female attendants, is a very important character about the homestead. No one is more tenacious of his rights or more complacent in the enjoyment of them. He is an original character, truly; but he has numerous imitators. The incessant pompous display of his plumage has ever been deemed an appropriate counterpart of the human exterior embellishment to attract attention beyond any claims founded on intrinsic merit. We cannot

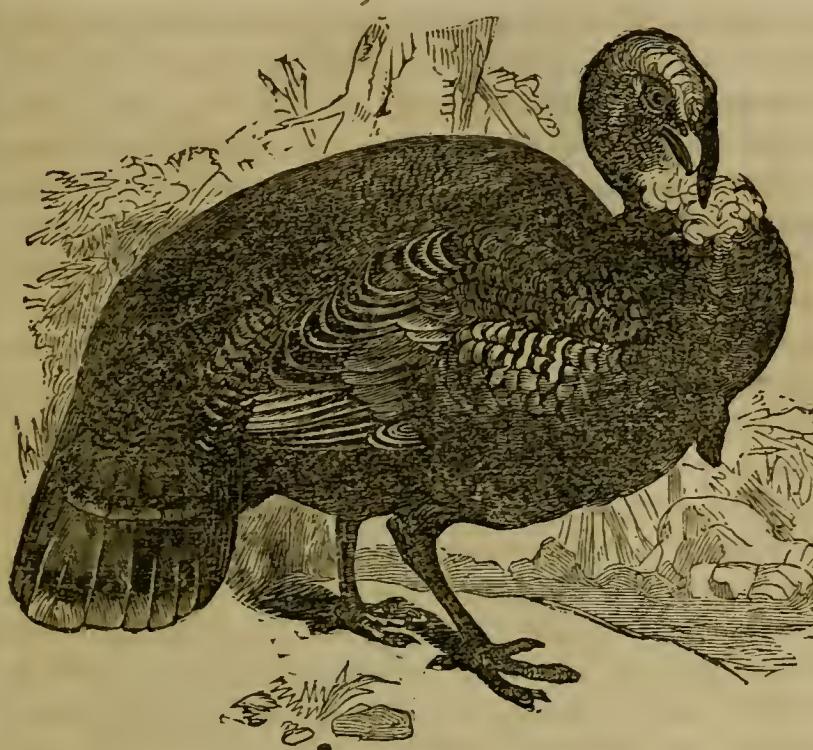


Fig. 3.—*The Bronze Turkey.*

sentative of his family, occupies no inferior rank in respectability or elements of being useful. He is led by instinct, if not by reason, to be a pattern of devotion to the safety of the community of which he is the legitimate head. He watches over the turkey chicks with the assiduity of the most faithful shepherd when guarding his flocks. He will never leave them; and is apparently unmindful of his own wants, so long as they require his watchful care.

THE BRONZE TURKEY.—The domestic turkey can scarcely be said to be divided, like the common fowl, into distinct breeds, although there is considerable variation in color as well as in size; but no dwarf race exists, unless we except the small, delicate-fleshed turkeys of Hempstead Plains, Long Island, which are said to weigh, when dressed, not more than four or five pounds.

RICHARDSON says “there is a question whether the domestic turkey is actually a second and distinct species, or merely a variety of the wild bird, owing to the diversity of its aspect to circumstances dependent on locality and consequent change of habits, combined with differences of climate and other important crosses, which we know in the case of other animals produce such remarkable effects.”

BUFFON and others assert that “there is but one species of the turkey;” in this country we have several varieties, known by their color, viz:—the black, the bronze, the pied, the slate, the ashy-gray, the white and the copper-color.

fail to be amused on seeing either of these animals of the masculine gender thus struggling for the ascendancy; but we cherish less respect for the one in broad-cloth than his prototype in feathers. Indeed, the latter, although not celebrated for his endowments, presents more intelligence than is usually attributed to him; and, moreover, as the repre-

The ashy-gray and copper-color are not particularly remarkable, but the black and bronze are decidedly superior in every respect, not only as regards greater hardiness and consequent greater facility of rearing, but as acquiring flesh more rapidly, and that being of the very best and primest quality. Those of this color, particularly the bronze, appear to be less far removed than the others from the original wild stock.* Fortunately, too, the black and bronze seem to be the favorite color of nature, and they are produced far more abundantly than those of any other hue.

As to the relative value of the ordinary varieties, it would be almost difficult to offer an opinion; but those who suppose the white turkey to be the most robust and most easily fattened are decidedly mistaken, both in theory, as far as analogy may guide us, and in practice, where the certain test of experience has shown to the contrary. The pied and copper-colored varieties are generally undersized, and are among the most difficult of all to rear; but their flesh is certainly very delicate, and perhaps more so than that of any other kind—a circumstance, however, that may partly result from their far greater delicacy of constitution, and the consequent extra trouble devoted to their management. The finest and strongest birds are those of a bronze-black, resembling, as closely as possible, the original wild stock. These are not only reared the most easily, but are generally the largest and fatten the most rapidly. Some turkeys are of a coppery-tint, some are of a delicate fawn-color, others are pied or parti-colored, gray and white, and some few of a pure snow-white. All the latter are regarded as inferior to the black and bronze, their color indicating something like degeneracy of constitution, if not actual disease.

THE WHITE TURKEY.—The varieties of the domesticated turkey are not very distinct; the most so is the white, which are very elegant creatures, and though the most tender of all to rear, are not so in anything like the same degree as the white pea-fowl. It is well known that most birds, wild as well as tame, occasionally produce perfectly white individuals of more delicate constitution than their parents. We cannot doubt that the selection and pairing of such is the way in which the breed of white turkeys has been established and kept up. However, with all care they will now and then "cry back," and produce speckled or pied birds; and so show a tendency to return to their normal plumage. It is remarkable that in specimens which are snow-white the tuft on the breast remains coal-black, looking in the hens like the tail of a mink, and so showing as a great ornament. The head and caruncles on the neck of the male are, when excited, of the same blue-white

* A few years ago, Rev. R. H. Avery, of Wampsville, N. Y., exhibited a cross of the wild and tame turkey, beyond competition; the largest weighed 33 pounds, and several others 30 pounds each. Their plumage almost vied with the peacock in brilliancy. These are supposed to be the origin of the now famous bronze turkeys; and such turkeys would ornament the palace of Queen Victoria.

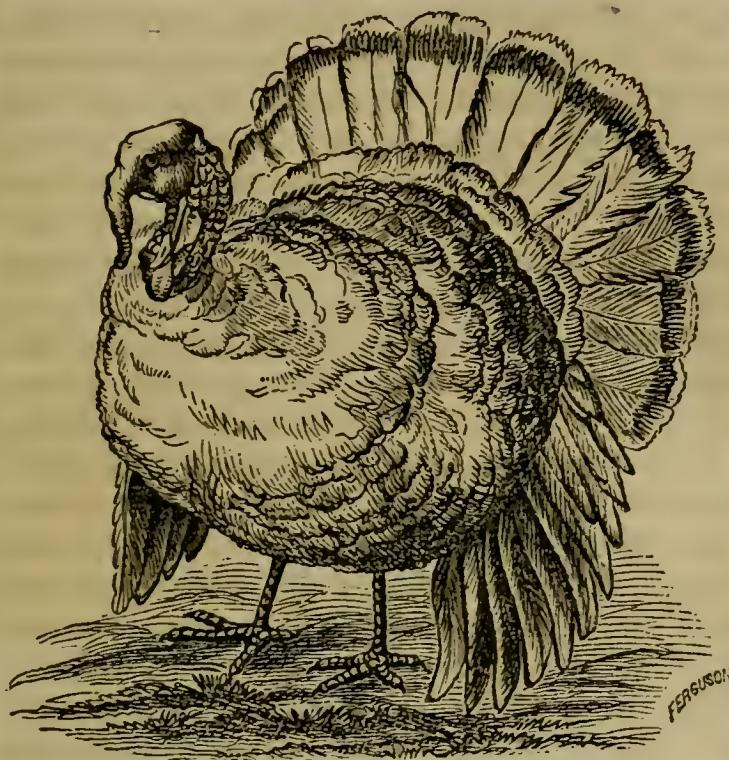


Fig. 4.—*The White Turkey.*

and we, accordingly, should avoid condemning to the confinement of close, and often filthy fowl-houses, a bird which, in a state of nature, always perches in open air. Open sheds and high perches are what they require; and this dislike to the mode of housing we speak of, may be recognized in the eagerness with which they rush out the instant the door is opened in the morning.

CHOICE OF A COCK.—He should be vigorous, broad in the breast, clean in the legs, with ample wings, and a well developed tail plumage; his eyes should be bright, and the caruncled skin of the neck full, and rapid in its changes of color. Though capable of assuming his legitimate rank among the hens when a year old, he is not in perfection until he has attained his third year and is entering upon his fourth, and he continues in his prime for three or four years. Thus for two, three or four years, or longer, may all the young cocks be devoted to the spit, one, perhaps, of particular beauty being preserved within that space of time for the adornment of the farm-yard.

CHOICE OF THE HEN.—The hen should be like the cock in plumage—those with white feathers appearing amidst the black should be rejected; her figure should be plump, and her actions lively and animated. The hen breeds when a year old, or rather in the spring succeeding that in which she herself left the egg; but she is not in her prime until the age of two or three years, and will continue for two or three years more in full constitutional vigor. Whether the breeder prefers to keep a store flock for several years, or prefers a yearly or biennial change, will depend on his views and the general practice

and red hues. Thus the creature, with small portions of black, blue and scarlet relieving his snowy and trembling flakes of plumage, is truly beautiful; and some few keep them in spite of the disadvantages attending them. A merit is they are most temptingly white for market.

Management.

A knowledge of the natural habits of the turkey is of the greatest importance in guiding us as to its treatment, in a state of domestication;

of the neighborhood around him; most persons would keep a first rate cock for three or four years, or even longer, however they might change the store-flock of hens; and, indeed, if these produced first rate chickens it would be a pity to substitute younger birds in their place. Of course the stock, whatever its prescribed number may be, should be kept up, deficiencies by death and accidents being duly supplied.

NUMBER OF HENS TO ONE COCK.—The number of hens to a cock is disputed by many. Some seem to think that when one has a certain number of turkeys it is indispensable to have a proportional number of cocks; and is of opinion that one cock will be sufficient for ten or twelve females, and in this number he cannot be far out of the way, if one treading is, as some seem to think, proved by experiment, sufficient to fecundate all the eggs of one laying. So satisfied are they of this fact that they think one cock may be disposed of, and sold after the hens begin to lay. Others advise that six hens to one cock may do no harm; and mention it as a common practice with some to keep a cock for the use of their neighbors who may have a few hens, rendering it too expensive to keep one.

LAYING AND HATCHING.—Early in April the turkey-hen may be seen prying about into quiet, secret places to lay in, often stealing far from home. She indicates this coming event by a peculiar cry, by strutting about with an air of self-satisfaction, and often by peering into out-of-the-way places, evidently in quest of a secure spot for incubation; for her instinctive dread of the male is not removed by domestication, nor has the male lost that antipathy to the eggs which is his characteristic in a state of nature. She should now be carefully watched, and some management is required in order to find her nest, which generally may be found in a cluster of brambles, thickets or shrubs, or at the foot of a tree or stump. It is generally in the morning that the turkey-hen lays, and mostly every other day, though some lay daily until the number of eggs amount to from fifteen to eighteen. As the eggs are laid it is well to remove them, leaving a porcelain egg as a decoy until the number is complete, as they are liable to be broken, chilled by late frosts, or to be sucked by rats, weasels or skunks. On leaving her nest she is careful to cover the whole with dry leaves, so artfully disposed as to render it difficult even for one who has watched her movements to find the nest, and on returning to it she varies her route, scarcely ever returning to it twice by the same course. Hence it is mostly by accident that the nest of the hen is discovered.

INCUBATION.—The determination of the turkey-hen to sit will be known by her constantly remaining on the nest, though empty; and it is seldom in a position sufficiently secure against the weather, or depredations of foxes or skunks, and pilferers. A nest should be prepared for her by placing some straw with her in a box or half-barrel, in a convenient out-building. She should then be brought home and gently and kindly placed upon it. It is a

most pleasing sight to witness the satisfaction with which the hen takes to her nest and long-lost eggs, turning them about, placing them with her bill in the most suitable positions, packing the straw tightly about and under them, and finally sinking upon them with the quiet joy of anticipated maternity.

In about four weeks the little birds will be hatched; and now as they have fairly entered on life, what must be done with them, and how are they to be reared? This demands consideration. Were she in the woods, wild and undomesticated, leave them to the care of the mother, for nature is the best guardian and provider. But she is under our protection, and in our hands is the destiny of her offspring. Give them nothing; do nothing for them; let them be in the nest, under the shelter of their mother's wings, at least eight or ten hours—if hatched in the afternoon, till the following morning. We must, however, do something for them at least after they are one or two days old, or they will perish by starvation. In doing this, however, avoid the too frequent and mischievous practice of stuffing them with Indian meal, moistened with water. They are but tiny birds, with delicate constitutions. In a state of nature, ants' eggs are eagerly devoured by them; hard-boiled eggs, chopped fine, with curd or thickened milk, we have found a good substitute. Crumbs of bread, moistened in milk and water, is excellent food for them.

When first hatched, some say plunge them in cold water to strengthen them; those that survive will most assuredly be hardy birds. Others say, make them swallow a whole pepper-corn; which is as if we should cram a Spitzendburgh apple down the throat of a new-born babe. A few advise that they be taken away, and be kept in a basket by the fire-side, wrapped in flannel or wool, for eight or ten hours. Why take them away from her? She has undergone no loss nor labor; she wants no rest, having had too much of that already. All she requires is the permission to indulge, undisturbed, the natural exercise of her affectionate instinct.

The time the turkey-hen may be allowed full liberty with her brood, depends so much on season, situation, etc., that it must be left to the exercise of the keeper's judgment. Some, whose opinions are worthy of attention, think that, if the young are thriving, the sooner the old ones are out with them the better, after the first twelve or fifteen days. A safe rule may be fixed at the season called "shooting the red," a "disease," as some are pleased to call it; being about as much of a disease as when the eldest son of the turkey's master and mistress shoots his beard. If let loose at this time they will obtain much by foraging, and they will be thankful for all you choose to give them. They are entomologists, and devourers of insects. Did you ever observe them when they espied a bug or fly, and notice with what precision and unerring aim they pounce upon and seize it? They should, for two or three weeks, be kept in a dry place, under cover, and they may then be

placed out of doors, in some enclosure, to keep them from rambling. The best way to confine the mother is to place a crockery crate over her, at the sides of which the little ones could have an easy passage in and out. To confine the young and prevent them from going abroad before the dew is off in the morning, boards may be placed at the sides and ends, and secured by driving stakes in the ground. The top should be covered with boards, also, to protect them from rain. They may now, if the weather be fine, be allowed a few hours liberty during the day; but should a shower threaten, they must be put immediately under shelter. A severe shower or long continued rain is sure to thin them off rapidly. This system must be persevered in for five or six weeks. By this time they will know how to take care of themselves. On the first drop of rain they will run for shelter into their accustomed place of refuge, which must be warm and water-proof. As they get older, grain may be given them freely. They now begin to search for insects, and to dust themselves in the sand. At the age of two months or more, the males begin to develop their distinctive character; the red caruncled skin of the neck and throat assume a marked character; this is a critical period. The system requires a full supply of nutritious food, and good housing at night is essential. The time of danger is now over, and they become independent, and every day grow stronger and more hardy. They now fare as the rest of the flock, on good and sufficient food, if their keeper is alive to his own interest.

Now is the time that turkeys begin to be troublesome and voracious. What can you expect from a creature that is to grow from the size of a robin to twelve or fourteen pounds, in eight or nine months? Corn-sacks, oat-bins, barn-swallowers, ill-neighbors, are epithets deservedly earned. They will jump into the potato-ground, scratch the ridges on one side, eat every grub, wire-worm or beetle that they find, and every half-grown potato. From thence they will proceed to the rutabagas; before the bulbs are formed they will strip the green from the leaves, thereby checking the subsequent growth of the root. They are seldom large enough to make much havoc among the standing corn, as cocks and hens, or they have not yet acquired a taste for it; but when the corn ripens in October they will exhibit their graminivorous propensities, to the great disadvantage of the farmer. The farmer's wife sees them not, says nothing, but at Thanksgiving or Christmas boasts of the large amount of her turkey money. The reader will at once perceive there is *care* in all this, but when Thanksgiving and Christmas come—to say nothing of all the Sunday roasts during winter, our care is lost in enjoyment, and we come to the conclusion that *turkeys are worth raising.*

A SHEEP BARN.

Good managers of sheep have long since discovered that the most economical investment is for the erection of buildings for shelter. The amount of food consumed is less, and the growth of wool is much greater, while casualties rarely occur when these animals are protected from the weather. At the present time, when the price of wool is so high, sheep-raisers feel an additional interest in the subject; and frequent inquiries are made for the best plans of sheep barns.

Among some of the plans which we have examined, we particularly recommend the following:

The barn is a two-story building; consisting of a stone basement set

in a hill-side, on which rests the frame structure above. The basement, (fig. 1,) is built on the south side of a hill-side, and consists of a stone wall on three sides not less than seven feet high; the front, facing the south, consists of a board partition and two wide doors, say seven or eight feet wide, hung so as to rise and fall when opening and shutting. The arrangement for

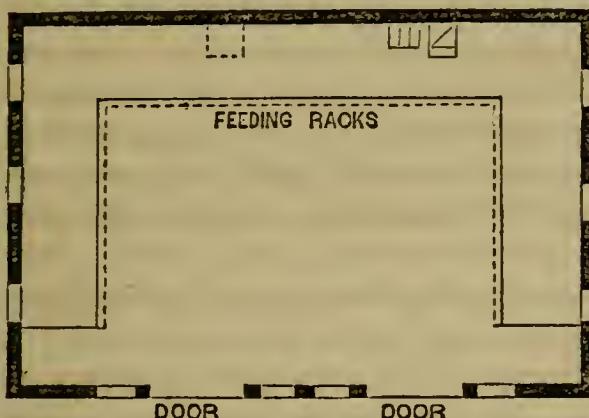


Fig. 1.—*Basement.*

this purpose is easily effected by means of counter-poising weights, which may be either of hewn stone, set with iron hooks, or small, stout oak casks, filled with broken cast-iron and sand.

For determining the proper amount of weight for balancing the doors, the latter may be first weighed, or their weight calculated very nearly by allowing about thirty-two pounds to the cubic foot, if they are made of white pine, as they should be. The weights, if of lime-stone or sand-stone, will weigh about one hundred and fifty pounds per

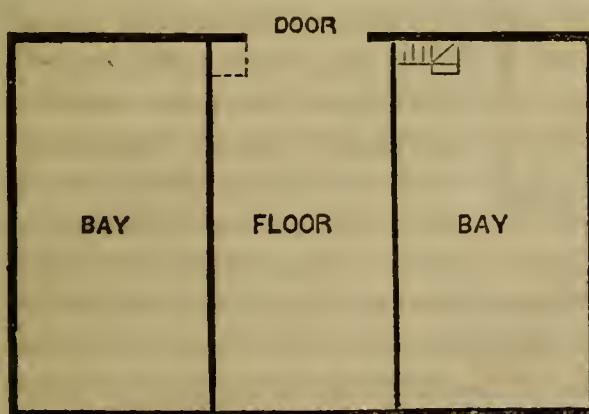


Fig. 2.

cubic foot. The mixture of cast-iron and sand will be a little over three hundred pounds per cubic foot. Any one understanding arithmetic will easily determine very nearly the size for the weights, and an accurate adjustment may be afterwards made by adding to or taking from them.

They should be hung with small chains running over stout cast-iron wheels or pulleys. Doors thus made are easily opened and shut without being impeded by snow or accumulations of straw or manure, as might be the case with doors hung on hinges or running on rollers. They may be opened to any desired height, so as just to admit sheep and exclude cattle and larger animals.

On the three sides of the apartment enclosed in the basement, and six or eight feet from the walls, are the feeding racks, as shown in the cut, (fig. 1, p. 189.) If more space is desired for the sheep, there may be but one line of racks, extending the length of the apartment. The dotted lines show the place of the trap-door where the hay is thrown down from above, and it is then carried along the alley by the attendant and readily placed in the racks, the sheep being excluded from the alley. The stairs are placed at the corner of the floor above, and afford ready access from one part to the other.

The second floor, (fig. 2, p. 189,) needs but little explanation. The hay is drawn in at the door, (an embankment being made against the wall for this purpose,) and pitched into the bays on either side. For the purpose of ventilation, a window is placed in the upper part of each gable, which is opened and shut by means of a cord running over the necessary pulleys, and extending down to the floor.

The size of this barn may be varied according to circumstances. If thirty by forty feet, the floor may be fourteen feet wide, which will leave each of

the bays thirteen by thirty feet, or three hundred and ninety cubic feet in each for every foot of rise. Consequently these bays will each hold about one ton of timothy hay for every foot and a quarter, and if the posts are fourteen feet, they will contain each about fifteen tons, if stored to the peak, or about ten or eleven tons of clover hay. This will be more than an ample supply for all the sheep that can be profitably kept in the basement.

A modification of the plan is shown in fig. 3, and will be preferred by many. It consists in placing two lines of two-sided racks, one under each edge of the floor above; a row of trap-doors along the sides of the floor admits of these racks being filled without going below.

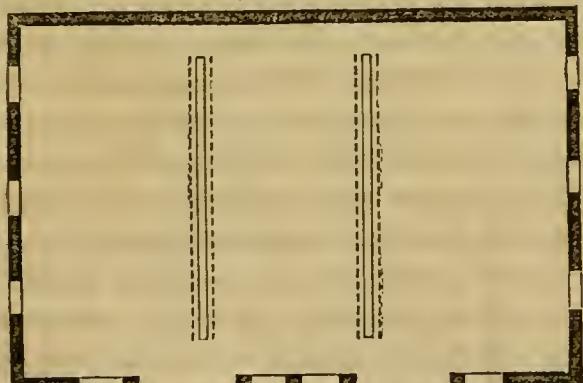


Fig. 3.

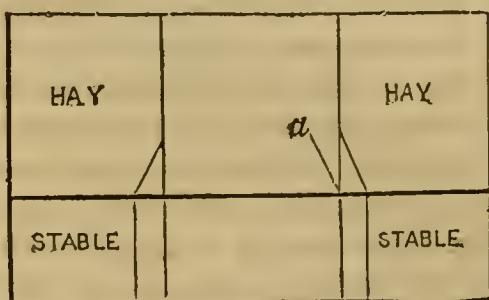


Fig. 4.

The best way of forming these trap-doors is shown in fig. 4, (p. 190,) the doors being made to swing down to the floor when open, and to shut up against the base of the mow when closed, as shown at *a*.

BEE MANAGEMENT.

WRITTEN FOR THE ANNUAL REGISTER BY L. L. FAIRCHILD.

[In the second and third volumes of RURAL AFFAIRS will be found two short articles, from the pen of M. QUINBY, on Bee-Management and on Movable-Comb Hives; and also another article describing the management of CURTIS COE in relation to swarming, constructing honey-boxes, &c. The following pages contain some interesting and valuable suggestions for the beginner, in addition to what has been already published:]

If an average of five persons constitute a family, and there are ten millions of people living in the rural districts of the United States, then there would be two millions of separate households. If each house had its hive of honey-bees, and it produced an average surplus of twenty pounds of virgin honey, at fifteen cents per pound, it would give each family an income of three dollars. Each hive, on average, would throw off one strong swarm yearly, which would be worth at least three dollars more, making the income from one hive six dollars—not an unreasonable estimate, where bees are properly understood and cared for. This would make an aggregate of twelve millions of dollars in the United States. But when we consider that every family in the rural districts need not be confined to one hive, but may have its half a dozen or upwards, we easily comprehend that it may be a source of domestic economy and national wealth that can be counted by the tens of millions. It is estimated that the bees of Austria produce enough yearly to pay all the taxes of that heavily burdened country. The government of Russia, seeing the importance of bee culture as a source of national wealth, has established courses of instruction, where her subjects are taught the science of bee-keeping at the expense of the national treasury. If the following hints serve to draw increased attention to the cultivation of this honey producing insect, the object of the writer will be attained.

THE QUEEN is the only perfect female bee in the hive, and lays all the eggs from which are produced workers. During preparations for swarming, she deposits eggs in drone and queen cells, from which males and queens are developed. There seems to be no difference between the eggs for a worker or a queen. The kind of cell and food fed to the larvæ, producing a worker or queen, according as the case may be. The fertility of the queen, in the height of the breeding season, will average fifteen hundred eggs per day.



Fig. 1.—*Queen.*

Her laying is not confined to the summer season, but she has more or less brood the year round, with, perhaps, some short exceptions during the very coldest weather, or a dearth in the honey harvest. She generally dies in her fourth or fifth year. She may be known by her longer body and shorter (in proportion) wings, than the worker, having a more wasp-like form of a golden color underneath, with a slightly darker back. Her body is longer than the drone, but not so large. She can be handled with perfect impunity, as she never uses her sting except in combat with her rivals.



Fig. 2.
Worker.

THE WORKER BEE is an imperfect or undeveloped female bee, and forms the bulk of the population of a hive. A hive may contain from fifteen to fifty thousand workers, more or less, according to season and circumstances. The workers gather all the honey, pollen and bee-glue, carrying the latter in little baskets on their thighs, the former in a little sack, sometimes called the first stomach. They secrete the wax from honey, feed the young, clean the hive; in short perform all the labor except laying the eggs: Their lives, in the working season, are short, being an average of only about two months. During the winter, when their labors are suspended, they may live six months, or even more. Notched and ragged wings are signs of old age in the worker.



Fig. 3.—*Drone.*

THE DRONES are the male bees of the hive, and their only known use is to fertilize the queens, when out on their wedding excursion. This takes place when on the wing. The queen never leaves the hive, except to meet the drones or lead off a swarm. A few drones answer all the purposes of an apiary, and the careful apiarian will avoid breeding them largely, as they are idlers and useless consumers of large amounts of honey, when their numbers are large. The bees kill them off when the honey harvest fails, or swarming is over. The drone has no sting.

BREEDING.—After the queen deposits the egg, it takes an average of about twenty-two days before the worker comes forth a perfect insect. About twenty-five days are required from the laying of the egg to the hatching forth of the drone. The time for the development of the queen is only sixteen days from the laying of the egg. The engraving, (fig. 4, p. 193,) we copy from "Nature's Bee Book," by W. A. FLANDERS, Shelby, Ohio, represents a piece of brood-comb with the different stages the eggs undergo in passing to the perfect bee:—*f*, eggs changing to larvae; *e*, the worker cells just before the bees emerge from them; *n* shows a queen cell made by cutting down the adjoining worker cells, containing a grub three days old; *g* is the drone-brood capped over; *c* is the base of a queen cell,

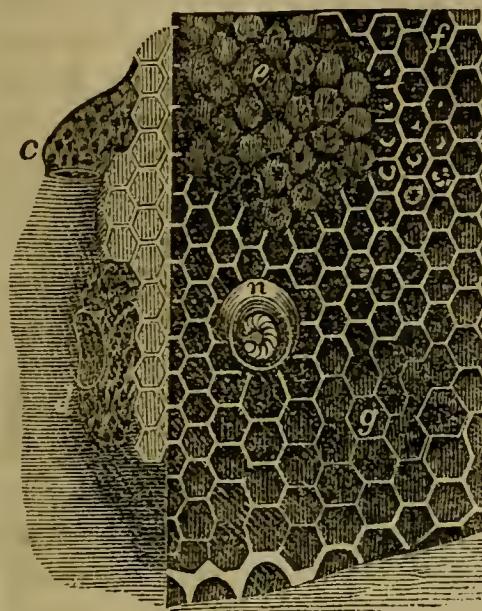


Fig. 4.

as cut down by the workers after the occupant has emerged; *d* shows where an embryo queen has been torn from her cell by a rival queen.

Fig. 5 represents the edge of a comb with queen cells attached—*b* shows a perfect queen cell, before the hatching of the queen; *a* shows a cell from which the queen has escaped, leaving the cap attached to the back edge. The queen, as well as the other bees, escapes from her cell by gnawing away the cap until



Fig. 5.

she is able to force her body through the opening. These engravings are one-half the natural size, and will give a good idea of the worker, drone and queen cells. It takes about four drone, or five worker cells, for a linear inch.

SWARMING.—No certain signs have yet been discovered to indicate the time when the first swarm will issue from the parent hive. If the weather and yield of honey are both favorable, swarms may be looked for when the bees come to be crowded for room, the hive being well filled with combs, stores and bees, and royal cells in a forward state of preparation. The old queen invariably leads forth the first swarm. In about nine days after the issue of the first swarm, a second may be looked for, if the weather and honey harvest are favorable. In about three days the third swarm may issue. The second and third swarms may vary more or less from these times, according to the state of the weather and circumstances. If the apiarian places his ear against the hive in the evening or morning, when the bees are quiet, in about a week from the issue of the first swarm, he will be likely to hear piping, ("peep," "peep,") if the bees intend to issue in a day or two. If the sound is not heard, attend and listen for several evenings. As soon as piping is heard you may expect the second swarm as soon as the second or third day thereafter, the weather permitting.

Fig. 6 represents a clustering device for swarms to alight upon. It is made of a block of wood, shaped as represented, and covered with a piece of black cloth or felt hat—or it may be stuffed with straw or other material, with a wire hook inserted to hang in a shady place, on the limb of a tree or bush, near, and in plain sight of the hives. Several of these devices may be placed in different parts of the apiary. If a few dead bees are strung upon the device, swarms will be more likely to settle upon them. Those



Fig. 6.

using them report good success in having their swarms cluster on these decoys. In hiving they are very convenient, as they are easily detached from the limb, without disturbing the bees, and taken to the hive and shaken down before the entrance or into the hive.

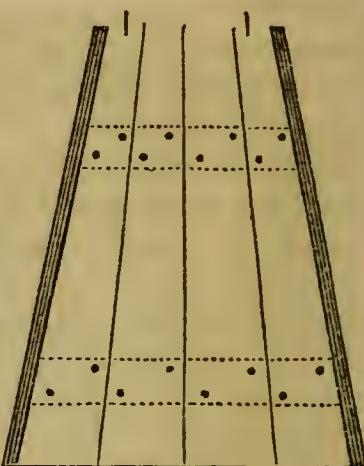
Fig. 7 represents what

the Germans call a "bee-

Fig. 7.

course." It is made of half-inch pine boards, secured by battens or cleats, and is about four feet long and two feet broad at the widest end, and tapering down to the width of the hive it is designed to accompany. Strips are nailed upon each edge, raising about two inches above the surface of the board, so as to guide the bees to the entrance of the hive. In use, the widest end is placed upon the ground and the other supported on a level with the bottom board of the hive by two strips of hoop iron, projecting from the upper surface and resting on the bottom board. It is very convenient in hiving swarms. By shaking the bees near the lower end and dipping up a few and placing them near the entrance, they will set up a call, when the remainder will commence marching up the "bee-course." By keeping a sharp look-out, the queen can be seen as she marches up the board to enter the hive. May, June or July, may be the chief swarming months, according to locality and season, and the condition of the stock in the spring. Very few swarms fly away to woods from apiaries that are carefully attended. The careless and negligent bee-keeper often loses some of his best swarms from this cause. If swarms attempt to leave, throw water and dirt among them, and it will prove much more effectual than all the outlandish noise you can make. Use hives perfectly sweet and clean, and use no salt or herbs in their preparation. A swarm may be prevented from leaving by contracting the entrance to *exactly five thirty-seconds* of an inch. This allows the workers to pass, but confines the queen. Without her the bees will never leave. A strip of tin can be tacked over the entrance, leaving a space five thirty-seconds of an inch between it and the bottom board. In case of second and third swarms, it should be removed the third or fourth day, to allow the queen to fly out to meet the drones.

ARTIFICIAL SWARMS, equal in value to natural swarms, can be made by those having the movable-comb hive. It should only be practiced when the bees are gathering honey abundantly, and there are plenty of drones to mate with the young queens. A little before, or about the time of natural



swarming, is the time to practice it. A good way is to make one good swarm from two strong stocks. Take the combs from hive No. 1, and shake the bees back into the hive, brushing off with a wing any that may remain after a shake or two. Put these combs, destitute of bees, into a new hive. Leave one comb, containing eggs and brood, and the queen, in the old hive. Put in empty frames to fill the place of those taken out, and leave the hive on its old stand. Remove a strong stock No. 2 to a new location, and put the hive containing the combs taken from No. 1 on the stand formerly occupied by No. 2. If this is done while the bees are in full flight, those in the field belonging to No. 2 will enter the new hive containing the combs, brood and stores taken from No. 1. Finding their queenless condition, they will immediately set to work and build queen cells, and, if everything works right, will have a queen ready to emerge from her cell the fourteenth day. Plenty of brood will hatch from day to day, to keep up the strength of the swarm until the young queen commences laying. The old stock will prosper, as it retains its fertile queen and is in nearly the condition of a natural swarm. If a few frames containing empty comb could be given them, it would be a great help, as every pound of comb they build consumes fifteen or twenty pounds of honey in its elaboration. There are many other ways of making artificial swarms, but this is about the safest method for the inexperienced, and produces a moderate increase of stocks, and yields a good supply of surplus honey. It will be found very safe, and profitable in the long run. The inexperienced had better not divide or increase their stocks more than fifty per cent in any one year. Too great an increase of stocks is the rock that many an apiarian has split upon, when endeavoring to increase his apiary by artificial swarming. There is considerable of a saving to be made by rearing queens artificially, to supply every new artificial swarm; but it should only be attempted by those well versed in the natural history and management of the bee. If you give the new swarm a sealed queen cell, it will save them time in rearing a queen.



SURPLUS HONEY BOXES, of a small size, are conveniently made, as recommended by Mr. LANGSTROTH. The sides are glass, and the top, bottom and ends of pine, one-fourth inch thick. The top and bottom project sidewise over the ends far enough to hold the glass and allow it to be tinned or cemented

Fig. 8. in, by running melted beeswax and rosin around its edges. Glass, 5 by 6. Size of boxes, inside measure, 5 inches high, $5\frac{3}{4}$ wide and $5\frac{1}{2}$ long—holding five or six pounds in a very showy and saleable form. The size can of course be varied to suit the hive, or preferences of the apiarian. Bees will not store quite as much honey in small boxes, but it will generally sell enough better to pay the extra cost. Before putting them upon the hive, let all the corners be cemented with rosin and beeswax, and pieces of bright comb cemented to the top, to induce the bees to commence

work in them early. The larger the pieces the better. Fig. 8 represents one of this style, stored with honey.



Fig. 9.

A BEE PROTECTOR, or *vail*, manufactured from black linen thread, with the edges sowed together, forming, when distended, a cylinder large enough to admit the brim of a hat, gathered round the crown with a string, and of sufficient length to be buttoned down under the coat or vest, forms a perfect armor against the sting of the bee. It is light, convenient, and obstructs the vision but slightly. It is immeasurably superior to the old wire bee-hat, as usually constructed. So far as the writer is aware, the honor of introducing this improvement on the old bee-hat belongs to K. P. KIDDER, Burlington, Vt. An article that will answer can be made of black barege or lace. The manner of wearing the protector is illustrated by the engraving annexed, (fig. 9.) The bee-keeper, armed with a vail, as shown in the figure, and a pair of India-rubber gloves, is perfectly safe from the attacks of a whole apiary. Old bee-masters are seldom stung, but beginners should be so protected that they can go among their bees with perfect confidence and perform all necessary manipulations with deliberation.

BEE-STINGS are seldom fatal, but very painful and annoying to some persons. If a little smoke is blown into the hive before the bees are handled, they will fill themselves with honey and will be good-natured. They will become as harmless as flies, and you can even tear their hives to pieces without their showing resentment, if you do not pinch or otherwise injure individual bees, which will resent such personal injuries by thrusting out their stings. Tobacco is the most effective and convenient article to use for smoking, and should be burned in a tube, made so that the operator can blow through the tube, directing the smoke through any orifice to any part of the hive. One or two puffs of smoke are generally sufficient to subdue any swarm. They can be bought, ready made, cheaply, or can be made by any one having a little ingenuity. Take a tube about three-fourths of an inch in diameter and two and a half long, open at both ends. Fit stopples to both ends, tapering down towards the outer ends; bore a gimlet hole through each; rim out the end (that is inserted in the tube) of the lower stopple, placing a piece of tin perforated with small holes over the end, to keep the tobacco from closing the orifice. Fasten it in by denting in the tube with an awl. The upper stopple serves as the mouth-piece, which should be left without fastening, so as to fill the tin tube, which will serve as the bowl of the pipe to hold the tobacco. When completed it will look



Fig. 10.

THE BEE-MOTH, or miller, and its progeny, are the pest of modern apiaries. The following engravings, (figs. 11 and 12,) show the male and female millers. The female is distinguished

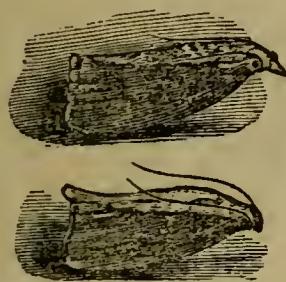
from the male by her bill-like head. She deposits her eggs in and around the warm portions of the hive, which soon hatch worms, as shown in fig. 13. The worms feed upon wax, and work in the centre of the combs edgewise, enveloped in a kind of tubular covering of web, so that it is with difficulty the bees dislodge them. Strong stocks will

generally protect themselves. Queenless and Fig. 13.

weak stocks are the most liable to fall the prey of these ravenous worms. If you attend often to your bees, destroy all the millers and worms found about the hives or apiary; you will be quite likely to keep them in subjection. Blocks or sticks placed under the hive, having little troughs or creases cut in them, and turned down upon the bottom board, with frequent openings for the worms to crawl under, form capital hiding places. Remove these every day or two, smash all the worms you find, and replace them for more. If a hive is made snug and tight, as it should be, you will trap nearly every worm, when it seeks for a hiding place to wind up, preparatory to its change into a miller. No confidence should be placed in moth-proof hives, as a miller can go anywhere that a bee can, and move with great rapidity. Most moth-proof hives furnish an abundance of corners, cracks and crevices, for the breeding of the very nuisance they were designed to destroy. No judicious and careful bee-keeper need lose a stock by the bee-moth, if he only attends to their destruction as directed. The writer is indebted to Mr. LANGSTROTH'S work on the "Honey-Bee," for the engravings of bee-moth and worm.

LOSS OF QUEEN.—If the apiarian discards bee-houses, and sets his hives here and there about his grounds with some distinctive marks about each hive, so that the young queens in their flight can easily distinguish their own homes, the loss of queens will be very few. In the summer, when the drones are in flight, a queenless stock can be furnished with a sheet of comb containing eggs, and they will immediately proceed to rear a new queen. When the drones are not in flight, the queenless stock should be united to a stock containing a fertile queen, but one not very strong in numbers.

WINTERING BEES.—Mr. QUINBY reports, in the New England Farmer, that of all the ways he has tried, the best success has attended him in wintering



in straw hives, upon their summer stands. They guard against sudden changes of temperature, give good ventilation, and allow all the moisture to pass off.

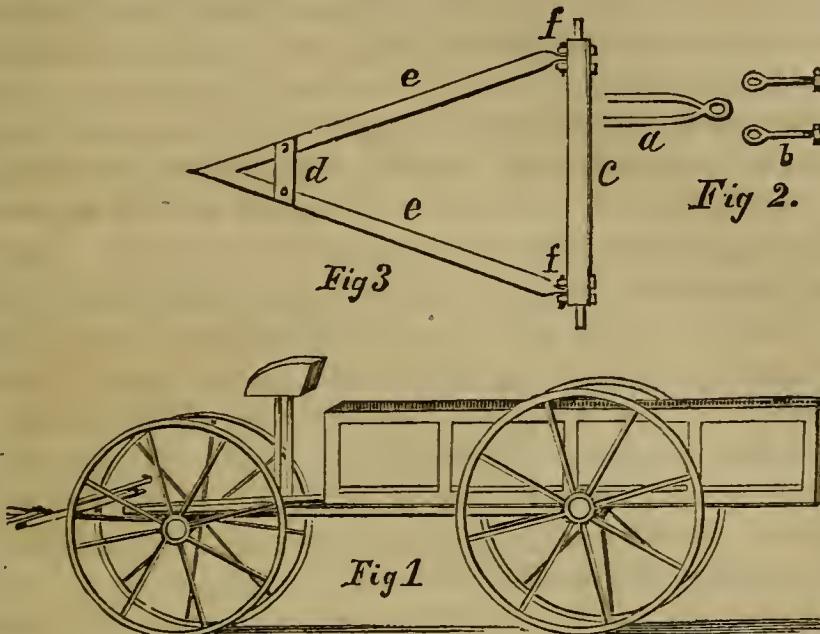
ROBBING.—Bees often learn to rob by having combs containing honey and other liquid sweets placed or left where they will attract their attention. Bees should have honey placed above them in the cap, and be well secured from intruders from other hives, if it becomes necessary to feed them. Honey should never be exposed where all the bees of an apiary can have access to it. If you discover a hive is being robbed, close the entrance so that only one bee can pass at a time. Incline the bottom board to an angle of about thirty degrees, and the bees, unless queenless, will protect themselves, with perhaps few exceptions. If any cases of failure do occur, the hive can be closed for a day or two, until the robbers give up the attempt. Ventilation must be provided, and the hive must be watched for a day or two after it is opened, as the robbers may again return to the attack.

CEMENT FOR BEE-HIVES.—A mixture of three-fourths rosin and one-fourth beeswax, melted and kept at the right temperature, in a tin dish, over a kerosene lamp, will be found excellent to cement the corners of hives, and combs into frames and boxes.

FARMING AND RURAL ECONOMY.

MOWERS AND REAPERS.—It has been ascertained that about 70,000 mowers and reapers were manufactured in the United States in the year 1864. Admitting that there were about twice as many in use, manufactured in previous years, it would give the number 200,000 in actual operation. One of these, drawn by two horses, will do the work of about ten men; that is, the labor of about a million hand-mowers and cradlers is done by these machines—not far from the number withdrawn from farms into the army. Had the present war occurred a few years sooner, or before they had been generally introduced, it must have resulted in great disaster to the farming interest. No wonder that British agriculturists are astounded at the unimpeded agricultural prosperity of the country.

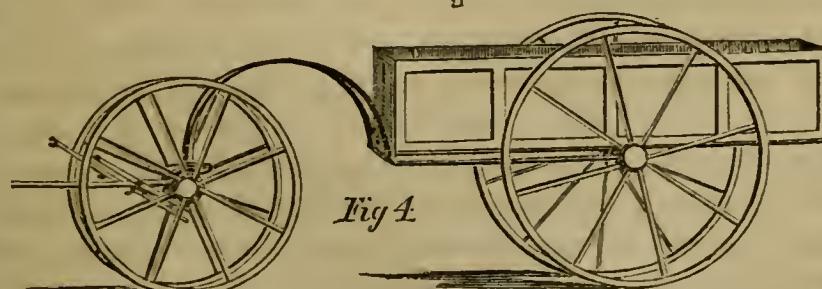
FOUR-WHEELED CARTS.—A correspondent, speaking of the great advantage of using four-wheeled carts for horses, so that they may tip readily, turn short, and not chafe and oppress the horse, gives the following description of two modes of construction:—Each hind end of the tongue is inserted in the iron *a*, (fig. 3, p. 199,) and bolted with two bolts, and two eye bolts. The irons shown at *b*, (fig. 2,) are put through the axle the width of the iron *a* apart, and secured with nuts. Then a bolt is put through the eyes



Distances between the axles 4 feet 6 inches. The tongue is made of white oak, 2 by 4 inches, or larger, according to the size of the cart. The length of each of the two pieces of which the tongue is made is 5 feet 6 inches. The hind ends of the tongue, where they are fastened to the axle, are 3 feet 2 inches apart, and the forward ends of the tongue meet in a point. The rocker iron is bolted across the tongue 9 inches from the point. The axles are of the usual length.

in *a* and *b*, for the cart to tip on. The axle is bolted to the cart's body. Fig. 3 shows the tongue of this cart; *c* is the hind axle, *d* the rocker iron. The tongue rests on the forward axle without a rocker—simply an iron bolted to the tongue; *e*, sides of the tongue; *f*, irons which fasten the tongue to the axle.

In cart No. 2 the hind axle is of the usual length, while the forward axle is but 36 inches from the outside of the hubs. The tongue of the cart No. 2, shown in fig. 4, is made of white oak as far as the front of the cart body; from *c* there to the forward axle it is of two curved irons, (see dotted line in the tongue, fig. 5.) The curved irons are 2 by 1 inch, curved high enough so the forward wheels will turn under them, similar



to the wheels of a coach. The forward axle is half the length of it, with two or three inches to clear, which equals twenty or twenty-one

VENTILATORS FOR BARNs.—The following excellent practical remarks are furnished by H. H. PETERS, of Southboro, Mass., and published in the COUNTRY GENTLEMAN:—I am reminded by the figure of a ventilator for the use of barns, in your paper of February 4th, that I am indebted to your "ANNUAL REGISTER OF RURAL AFFAIRS," of 1862, for my first idea of this plan, which I have already found of sufficient advantage to pay for the REGISTER for the next forty years at least.

I have a barn which, with the L attached, is over one hundred and twenty feet long. Until within two years it had no ventilation from the roof, though I had long been aware of its necessity, both for the benefit of the stock and the hay stored therein. Having one cupola on an adjoining barn, I was unwilling to incur the expense of building another, as a very ordinary cupola with blinds will cost fifty dollars in stock and labor. On seeing your plan for ventilators I was much struck with its simplicity and apparent efficiency, and immediately had four made—three for the main barn, twenty-two inches square on the inside, and one for the L, sixteen inches. As soon as they were put up, the improvement in the air of the barn was immediately noticeable; the rafter and roof boards that were ordinarily damp and sometimes wet from the condensed vapor, were at once dried, and the hay has since been sweeter and more free from must. The expense of these four ventilators, fitted and placed, including the cost of material, was thirty dollars; they are much more efficient in their operation than a cupola, as they take the air from four different parts of the barn, while a cupola operates only thoroughly near the centre. I am just completing a large barn, on which have been placed three ventilators of this description, each measuring two feet square in the clear; they are made of the best of lumber, and cost on the barn complete, at this time of high prices, twelve dollars each. In locating them on the building, I placed one in the centre of the roof, the other two one-fifth of the length of the barn from either end; this equalizes the ventilation throughout the building. These ventilators are rather ornamental than otherwise, giving a completeness of finish, and breaking a long line of roof. I would strongly recommend them to those persons who contemplate putting up buildings for the storage of cattle or hay. I have cupolas on two of my barns that I should be very glad to have replaced by the ventilators.

While on the subject of ventilation, I would remark on the importance of a change of air in the lean-to, or those parts of the barn where animals stand.

I have a barn ninety feet in length, on each side of which cows are tied. I used to be painfully impressed with the unhealthfulness of the atmosphere for man or beast, on going into the barn on a cold winter morning, when all had been tightly closed through the night. Hoping to make an improvement, I caused four boxes, 12 by 24 inches, to be carried upon each side of

the barn, back of the cattle, against the outside walls. These opened in the floor over the lean-to, and also on the outside of the building just under the eves; slides fitted to the lower opening regulate the draft. The plan has operated to my entire satisfaction, and with the ventilation in the roof, serves to keep the air always pure, which is no easy matter in a modern barn, containing sixty head of cattle.

One suggestion more and I have done. Much complaint is made by those having close sided or clap-boarded barns, that the hay laying near the outer walls becomes damp and mouldy. I think this may be avoided by nailing strips of board on the studs a few inches apart, which will prevent the hay touching the outside. In my own case, I have, in addition to the strips, an opening in the outer wall, near the sill in each section, six inches square; this creates ventilation, and keeps all dry and sweet.

HARVESTING CORN.—E. S. BARTLETT gives the following mode, in the **COUNTRY GENTLEMAN**. An improvement consists in using osier willow instead of straw for binding:—As the saving of the crop of corn depends a great deal on the manner it is harvested, it is important that the farmer should see that it is well secured against wind and rain while standing in the stook. The following is my method:—Cut six rows of corn in each row of stooks, commencing by cutting up the two middle rows, until you have a large armful, which set up between the two rows cut; tie the top with a stalk, and set it down as you would a sheaf in setting up a shock of wheat. This is the centre of the stook, and is not to be tied around a hill. Now cut up the other four rows, and as far ahead of the stook as is necessary to make a good size stook, taking care to set the stalks up straight, and to keep the stook round. When sufficiently large, tie snugly around the top, (not too near,) with a good band of rye or flax straw, and you have a stook that will stand the wind, dry out well, and when pulled down to husk, will leave no stalks standing, as is the case when set up around a hill, or four hills, as some recommend.

HOW TO MAKE CLOVER HAY.—A correspondent correctly remarks:—Clover should never be cut when wet either by dew or rain. My practice usually is to start the mower, say at 2 or 3 o'clock p. m., and cut until the dew falls. If the sun is very scorching, I begin later in the day. This is put into cock the next day, sometimes before noon, but oftener later, depending upon the weather and thickness of the grass, but always before the leaves get crispy. Sometimes I commence cutting as soon as the dew is off in the morning, and get it up the same day. If the dew or rain falls upon clover while it is green, little or no injury results from it if fair weather follows soon; but after clover is considerably dried, rain or dew cannot fall upon it without serious injury to the quality of the hay.

DEEP AND SHALLOW PLANTING OF WHEAT.—C. C. DEWEY, of Michigan, states in the **COUNTRY GENTLEMAN**, that he has for many years examined

many different fields; that in many instances he has found plants with a single stem, and in other instances large stools throwing up several stalks. On examination he has found that the single stems always proceeded from deeply buried seed, and the large stools from seeds slightly covered. This shows the importance of graduating the depth of seed drills so as not to deposit the seed at much depth.

CULTURE OF BEANS.—JAMES A. McCOLLUM, who has been very successful with this crop, gives the following directions in the COUNTRY GENTLEMAN, by which he can raise beans at less cost than wheat, and with greater profit:—A warm, gravelly soil is the best, and if covered with a stiff sod so much the easier to keep free from weeds. Take pains in plowing it; see that every sod is turned over; roll with a heavy field roller; thoroughly harrow; then mark out your rows. For the medium bean I make the rows twenty-eight inches apart; for larger varieties thirty-two inches. I am particular to secure the best beans for seed, and all of the same variety, for it is very essential in securing the crop to have them ripen at the same time, and they sell better if they have a uniform appearance as to size, &c. Plant in drills with a bean planter. I use one that plants two rows at a time, putting on usually about five pecks of seed per acre, of the medium. Having finished planting, roll all down smoothly with a roller; it is of great benefit to the crop, especially if you have to cultivate to keep down the weeds. I use a common corn cultivator—one that is so constructed that you can shut it up close. Very often, on ground that is free from weeds, they never cultivate them, but I think in stirring the soil it will increase their growth more than enough to pay expenses. We consider the best time to plant usually from the first to the tenth of June, although I have seen them planted as late as the twenty-fifth, and yield a crop of twenty-five bushels per acre.

SOWING GRASS SEED WITHOUT GRAIN.—We have, for some years past, occasionally recommended the practice of sowing grass seed early in spring, without grain. This recommendation has been founded on our own experience. We have never failed in obtaining a good crop of grass the same season when the sowing has been done early enough, with ground in good order. The soil should be sufficiently mellow to cover the grass seed when rolled in. A light brushing has answered the same purpose. To cause a sufficient growth before hot or parching weather sets in, the work should be done about the time the buds of trees commence swelling, and as much sooner as may be convenient.

We find the following statement bearing on this subject in a late number of the Boston Cultivator:

"It is a mistake to suppose that grass sown by itself in spring will not yield a crop of hay till the following year. If the ground is in good order and the season is favorable, it will generally give a fair crop in three months from the time it was sown. A case in point was lately stated to us

by A. W. CHEEVER, of Wrentham. He 'laid down' three lots of ground last spring; on one he sowed oats with the grass seed, on another wheat, while the third was sown with grass seed only. The oats were cut for fodder while quite green. Yet the grass did not do well; the plants did not thrive; and many seemed to die. We understood they did some better on the wheat plot. But where the grass was sown by itself, a good crop of hay was obtained in August, and present appearances indicate that the amount of grass on this plot will be at least double, the present season, to what will grow where the oats grew. Mr. C. states that the ground was of similar character and was treated in the same way. He doubts—as he well may—whether, where hay is worth \$20 per ton, it is economy to sow any kind of grain with grass seed."

TIME FOR CUTTING TIMBER.—We have often urged upon our readers the importance of cutting rail and other timber in the summer. Experiments of our own, and frequent observation, have satisfied us that soft wood, cut when the bark peels from it freely, and when it will rapidly season, lasts at least twice as long as winter or spring cut timber. The latter seasons slowly, and becomes partially sap-rotten; the former dries thoroughly and hardens like horn. There may not be so much difference in the durability of hard timber, when cut in summer and in winter. **WILLIAM CONE**, of Michigan, writes in the *Rural New-Yorker* as follows:

"In June, twenty-nine years ago, having need of a pair of bar posts, I had to cut a tree for that purpose. I cut a white oak about two feet through at the but, and split out a pair. The bark peeled off easily. I set them with the butt end in the ground. Now that pair of posts have outlasted about three sets in other parts of my farm, and the rails split at that time are much better than many that were split many years after. Now, basswood rails split in the summer, when they will peel easily, will outlast ordinary oak cut in the winter."

CLEANING SEED WHEAT.—I know, from long experience, that by washing the seed in brine as strong as it can be made, will prevent smut; it will also enable the farmer to skim out light wheat, chess, and almost anything else that may be in the seed, the strong brine bringing it to the surface much better than mere water. The wheat should, while in the brine, be stirred as long as any foul seed or light wheat rises; one bushel at once in a barrel is sufficient, with plenty of brine; then dip brine and wheat into a basket. When drained a few minutes, empty on a clean floor; take the same brine for another batch, and so on, until you have as much as you wish to sow that day; then sift on good slacked lime gradually, while another person follows around the heap and stirs it with a shovel: put on lime until the wheat will not stick together; then let it be sown and immediately covered; the lime will then continue to stick to the wheat, and be a good manure.—**J. T. ADDOMS**, in *Co. Gent.*

MOWING PASTURE.—The Boston Cultivator says:—We have often spoken of the advantage of keeping pastures free from the dead grass which, where the crop is not fed off, will accumulate. After grass has gone to seed, it is refused by stock, and the patches where it lies will be left, even after a new growth is started. The old grass makes the new sour and unpalatable. To keep the grass sweet, the pasture should be smoothly cleared off at least once a year. On a late visit to the farm of the Rev. C. C. SEWALL, of Medfield, he called the attention of the writer and other persons to some hay which he had cut in the pastures. Finding, after many years' experience, that during the flush of feed in the fore part of the season, his cows would leave certain places almost untouched, and which were, consequently, about lost, so far as to yielding any return, he mowed them, obtaining a considerable quantity of hay.

WIRE WORMS.—Some of the best farmers find that the best protection from the wire worm is thorough under-draining and the application of fresh or unfermented manure. Doubtless the impetus given to the crops is a chief reason of this security.

REMOVING ROCKS.—A correspondent of the Rural New-Yorker gives the following mode of sinking rocks:—"Dig by the side of the rock a hole large enough and deep enough to receive the stone and put it below the plow. When you have dug to the lower side of the rock, place a prop against it and the bank so as to hold it firm, and then dig under it a short distance to ascertain its size; then spade the hole to receive it. When all is ready take out the tools and pull out the prop, and if the rock does not drop a pry on the opposite side will soon drop it; then cover it over. It requires much less hard work to let a rock down than to raise it out of its bed, and the labor of drawing it away is a clear gain. The thing is out of the way, and an eye-sore no longer."

BEETLE HANDLES.—A correspondent of the Rural New-Yorker says the best way to insert the handle of a maul or beetle, so that it will never come out nor turn, is first to bore an augur-hole through the head an inch and a half in diameter, and then cut the hole square with a chisel, making it an inch and three-fourths long on the lower side. Then make the handle to fit this enlarged part at the end, working the rest of it down to an inch and a half in diameter, and bringing the handle up through from below.

ROTATION OF CROPS FOR DAIRY DISTRICTS.—In a strictly dairy region of country, the production of the grass crop—pasture and meadow—is the one great subject of interest; consequently the rotation of crops, the profits of grain raising, &c., attract but little interest. If we keep our cows well, all we care to sell is our butter and cheese. If our meadows fail we plow them, taking up the parts most run out, plant corn on the sod, and seed down the next year with oats or barley, so that each year we have Indian corn and oats or barley to feed to our cows; and we buy our flour. Some dairymen, it is

true, sell their coarse feed, but the dairy suffers, no doubt, to a certain extent.

COOKING FEED.—W. J. PETTEE gives the following directions for steaming feed for stock:—How to get a good cover for MOTT's agricultural boiler—buy a good tight molasses hogshead; saw the bottom off, say eighteen inches from the head, very true and even; saw a circular hole in the bottom ten inches in diameter, dishing, so that the piece taken out will do for a cover. When you use your boiler, fill it even full of potatoes or whatever you wish to cook; put on the cover, and fill the top full through the trap-door, and if the hogshead is of the right size and fits well on to the top of the kettle, so that but little if any steam escapes, you will find a great saving in fuel, as you can both cook one-third more, and do it with very much less fuel, than without any cover or only a loose one. My own is a two-barrel kettle, and I can cook it full of potatoes and pumpkins in two hours, with one very large handful of seasoned wood. It is all-important, however, that the apparatus should be well fitting, so as to preserve all the steam.

MARKING SHEEP.—DAVID STREET, of Ohio, gives the following directions:—I first used turpentine, linseed oil and lamb-black, stamping my initials on each sheep; in a few weeks not a mark was legible. I next tried boiling tar, keeping it hot by placing the vessel containing it in a kettle of coals. This was legible until the fleece was removed. I tried Venetian red and linseed oil, which soon became obliterated. Lastly I tried coal or gas tar, which makes a distinct and durable mark. Mark ewes on the side, wethers on the shoulder, and bucks on the rump. Sometimes stamp with my initials cut in a block of soft wood; also use a stamp cut in a circular form, making a ring; and when in a hurry use the large end of a corn cob, making one, two or three spots near together. By marking sheep of different sexes on different parts of the body, it facilitates the assorting of a flock. Last spring, marked all of my breeding ewes with copper labels, bearing a number stamped upon the face, suspended from the ear by a wire ring; but several of them are now missing, having been torn loose.

RELIEVING CHOKED CATTLE.—When the obstruction is far down in the throat, it may be carefully pushed down by a flexible rod, coated on the end by a piece of pork-rind, tied firmly on with a cord, the inner side outwards. When the obstruction is higher up in the throat, it may be removed by thrusting the arm down the throat and seizing it with the fingers. For this

purpose the jaws must be held firmly wide open, to prevent all danger of biting. The annexed figure represents a simple instrument used for this purpose, which may be made in a few minutes, and should be always kept on

hand by those who are not vigilant in excluding whole apples or potatoes from their animals. It consists of a strip of board made of hard wood, *a*,

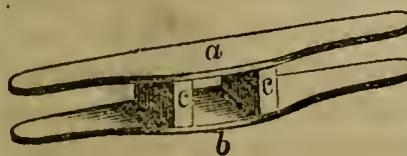
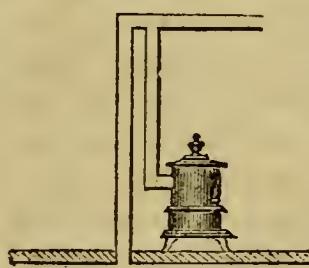


Fig. 6.

about two feet long and three inches wide, shaved or rounded at the ends so as to form handles. Two wooden blocks, *c*, *c*, are placed between this board and a similar board, *b*, so as to leave a hole or space just large enough for the hand and arm to pass through. These boards should be firmly nailed to the blocks. In using it a man stands on each side of the animal, and holds the horns, while the mouth is crowded open and the instrument held firmly by the handles. A third person, after removing his coat and rolling up his sleeves, thrusts his arm nearly full length down the throat and removes the obstruction. An active, half-grown boy, whose hand is smaller than that of a man's, usually succeeds best. The whole may be done in less than a minute's time—the writer has often performed this task without any inconvenience.

VENTILATING CELLARS.—Every one is aware, on a moment's reflection, of the importance of ventilating cellars—as foul air is not only detrimental to health, but is detrimental, or taints everything within its reach. During the warm part of the year, partial ventilation may be effected by opening opposite windows, but too much fresh air may render the cellar warm. One of the best contrivances, especially for winter, is to affix a branch pipe to the



stove-pipe in the room above, for this purpose, as shown in the annexed figure. The pipe passing up to some height above the stove before joining, does not materially affect the draft; and all difficulty of this kind will be prevented by placing a valve at the floor, to be shut while the fire is kindled, or to be partly closed if too much air passes from the cellar, causing a cold draught from the exterior crevices.

Fig. 7. As foul air generally rises to the upper part of the cellar, it is drawn off in this way as fast as it accumulates, and the apartment kept pure.

TO PREVENT A HORSE FROM PULLING AT THE HALTER.—Tie a rope around the neck, put it through a hole in the edge of the manger, and tie it around the fore leg below the knee, and when the horse pulls, the rope will slip through the hole and pull up the fore leg, and he will soon give it up.

PACKING VEGETABLES FOR WINTER.—There are two ways in which farmers usually deposit their vegetables in the cellar for winter, one of which, we are sorry to say is too common, is to take them up without much care, and with what earth happens to be adhering to them, and to throw them into a pile in one corner or other part of the cellar, where they remain till wanted for family use. We here allude to such vegetables as beets, carrots, parsnips, turnips, &c. If the cellar happens to be damp, many of them decay or lose their flavor; if it chances to be a dry one, a portion of them become shrivelled and too dry for use. The heaps are overhauled repeatedly to find such as are good enough for the table, and these confused and scattered heaps

present anything but a tidy appearance, while the decaying ones produce an unhealthy air.

We have adopted another way, which we like much better. A few bushels of fine clean moss is obtained from dense woods or from swamps. Clean barrels or smooth-planed boxes are taken to the garden, (a dry day being selected for the occasion,) and the vegetables being taken up, well cleaned, topped and trimmed, are placed in the barrels or boxes, with alternating layers of the soft, damp moss. When filled, the handcart or wheelbarrow conveys them to the cellar. The moss keeps them clean and sufficiently moist, preventing the accumulation of water on the one hand, and the drying and shriveling of the roots on the other. They are always fresh and ready for use, and are taken out from under the moss without the least difficulty. As the barrel is successively emptied, a portion of the moss is taken off and placed in another one for future use.

There are very few places where good moss cannot be obtained from the woods, within a reasonable distance; but if beyond reach, clean, moist sand may be substituted for the purpose of retaining the moisture. It is, however, heavier and more difficult to handle, and the vegetables do not come from it so clean and fresh as from the moss.

HOUSEHOLD MANAGEMENT.

WRITTEN FOR THE ANNUAL REGISTER BY A LADY.

WASHING CLOTHES.—Never put off washing on account of rain; it may be no drier any other day of the week.

A good washing-machine will save much labor and wear of fabrics. A good one is noticed in the first volume of *RURAL AFFAIRS*, page 263. The Union Washing Machine, (described in *RURAL AFFAIRS*, volume third, page 221,) is still better. The only requisite to complete success in working it, is to use *boiling* water. A good wringer, the Universal Clothes-Wringer for example, saves not only time and strength, but many dollars in the wear of clothing, which is always injured by the straining and twisting of wringing by hand.

Don't wash calicoes in soft soap, and never dry them out of doors; they will surely fade. Their colors may be set by washing once in soft water, in which beef's gall has been diluted in the proportion of one table-spoonful of gall to one gallon of water.

Many thousands of dollars are wasted by the careless washing of flannels. The following receipt, furnished by an experienced housekeeper, will infallibly prevent them from shrinking. Make suds of hard soap and *boiling* water;

lay in the flannels and leave them in it till the water is cool enough for the hands to bear. Then rub the flannels on a wash-board till clean; wring them out, and throw them into a tub of *boiling* water; let them lie till the water is cool enough for the hands, then rinse them in it thoroughly and wring them out. Repeat the rinsing process with another tub of boiling water, then hang them up to dry. Never rub soap on flannels. Never wash colored and white together; hang the former in the shade, the latter in the sunshine.

Do not use those clothes-pins that are made in the form of pincers, with a spring to shut the ends together. They hold too tightly, and cut holes in the clothes.

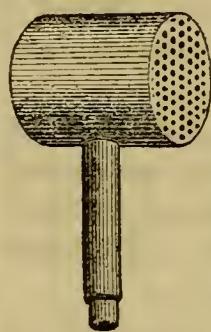


Fig. 1.—*Clothes Sprinkler.*

A simple article, called the clothes sprinkler, has been found by long trial to dampen clothes more evenly, and keep the hands dry besides. It consists of a hollow tin cylinder, about four inches long and three in diameter, closed at both ends, but having one of them pierced like the rose of a watering-pot. A tube inserted in one side admits the water into the cylinder, and forms a handle to hold while sprinkling. After filling the sprinkler, cork up the tube and shake the water over the clothes.

WASHING DISHES.—Those who have cool water, and little of even that, dirty dish-cloth and wiping towels, a greasy dish-pan, and a shirking, slovenly and unsystematic way of doing, will generally dislike to wash their dishes as much as other persons will dislike to use them.

Provide plenty of hot water beforehand, and make up a good fire. Have a good supply of clean crash dish-towels. Scrape the dishes very clean, put the kettles to soak, put away the food remaining after the meal, and begin by washing the glass in clear hot water. There is no need at all of breaking tumblers in washing. Put them in the water side-wise, so that the water will run into them at once and expand them outside and inside at the same time—then they cannot crack. Wipe glass while hot, with a dry towel. After this put soft soap in the water, and provide rinsing water. Wash spoons before the crockery, while the water is clean—thus avoiding the risk of losing them among larger articles and throwing them out with the turbid dish water. Change the water occasionally while washing dishes, and it will be neater—cleaner for the dishes and better for the hands. Knife-handles never should be put in water; they should be washed with a cloth above it, only dipping in the blades. As the hands of working-women get accustomed to heat, so that they do not feel uncomfortable in water hot enough to dissolve the cement which fastens the handles of cutlery, it is best never to risk them in water at all. But India-rubber handles are considered safe, even in very hot water.

The outside of kettles should be washed as much as the inside. Scrape

iron-ware with a circular piece of tin, bent up a little on one side to hold by. The medical instrument called a "spatula," a broad knife, is equally valuable for this purpose, as also for cleaning plates, as it scrapes a much larger space at once than a common table knife.

WORKING DRESS.—It is desirable, while performing domestic labor, to adopt such a style of dress as will be perfectly convenient to work in, without being so peculiar as to attract attention. A plain calico dress, made somewhat shorter than for parlor wear, but long enough to reach at least the tops of the shoes, is most convenient in all respects. If the hoops are worn quite small, and made open in front all the way down, so as to allow perfect freedom of motion, and so that they can lap over each other when entering a narrow place, so much the better.

But a large apron, made with high neck, full waist, belt, long sleeves and long full skirt, is exceedingly valuable to slip over a nice dress when doing housework, washing supper-dishes, &c. It should be made quite loose and of a material that will wash. Fasten up your dress-skirt with a "page," put on the apron, and you may go to work without the danger of spoiling your clothes.

BED-ROOMS.—To avoid giving discomfort to guests, every spare room should possess these essentials:—A good-sized slat-bottomed bedstead, furnished with a straw bed and mattress over it, (or feather bed if the weather is cold, or the guest prefers it,) over which a soft quilt is spread, then the clean sheets, bolster, pillows and more bedding than is really needful to be warm enough, as it is easy to lay off an extra quilt, but not always easy to ask for more; a wash stand, large pitcher of fresh soft water, wash-bowl, fine soap, slop-pail, two or more clean towels, two or three chairs, matches, pin-cushion and pins, brush and comb, looking-glass, and a few hooks for hanging up garments. No bed-room should be without a Bible. Window-curtains are essential; muslin are prettiest, made with a frill or valance gathered in at the top, over the main part of the curtain. A clothes-brush, pair of snuffers and extinguishers, a pitcher of drinking water and a tumbler are often acceptable.

Cleanliness and ventilation are essential not only to the comfort, but to the life and health of the occupants. Beds, absorbing much of the insensible perspiration, need much airing and frequent change of their furniture. A straw bed is probably most healthful, as the straw can be often renewed. Mattresses should be overspread with a quilt or "comfortable," not only to make the bed softer, but because it can be washed and preserves the mattress. Sheets need very frequent changing. Feather beds need daily beating-up, and much ventilation. Many of the most particular house-keepers, from ignorance of the insensible waste of the body, leave their beds in a state of apparent neatness, but of real filth and poison.

More than two persons should not occupy the same room, on account of

the exhaustion of the air. Children are often crowded together and greatly injured in this way. The effects become apparent in loss of appetite, paleness, &c., but the cause is seldom suspected. The windows of bed-rooms should be open as much in the day as practicable, and at night if agreeable. Do not sleep with the door closed tightly.

Beds should be made higher at the head than at the foot. A hollow in the middle of a bed is a certain sign of a lazy chambermaid. A true lady will always keep her own room as neat, or even neater than those rooms which are seen by company, and never leave it in a state which would require an apology for its appearance should it be suddenly entered.

ITEMS OF ECONOMY.—A strip of thick paper laid over the edge of each stair, under the carpet, will preserve a stair-carpet from wearing through *one-third* longer than otherwise.

Mark and number all clothing, bed-linen, table-linen, towels, &c. Count up frequently silver, knives and forks, and all articles of value or in common use.

Hull's Polishing Soap, for cleaning silver and plated ware, is a valuable article. It improves the polish more than scouring, saves time and does not wear or scratch the silver.

Clean brass kettles, before using, with salt and vinegar, to avoid being poisoned by the verdigris.

Gum tragacanth dissolved in water makes a good and cheap paste which will keep till it is used up.

Oyster kegs and mackerel tubs, when painted green, do very well to plant house-plants in; and large cocoa-nut shells, cut in two and hung up with cords, make respectable hanging-baskets.

When the wick is too large for the lamp, pull out a few threads and it will go in.

The flavor of common molasses is much improved by boiling and skimming it before using.

Damp tea-leaves, scattered over a carpet before sweeping, improve the colors and gives it a clean, fresh look.

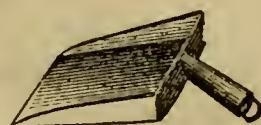


Fig. 2.—*Self-supporting dust-pan.*

When you want a dust-pan, have it made to order, with the handle turning down instead of up, so as to rest on the floor and tip the dust-pan at a proper angle for receiving the dust. It is a great convenience, as you then do not have to stoop and hold it while sweeping.

The patent carpet-hooks, sold by the hardware merchants, are greatly superior to tacks, saving a great deal of painful drudgery in putting down the carpet, and not requiring to be taken out and replaced every time the carpet is shaken.

Charcoal and honey, mixed together and used as a dentifrice, will whiten the teeth with a few applications.

Beef tea is best made by cutting up tender, juicy beef in bits about one inch square, and put it in a strong bottle, cork it tightly and set it in a kettle of cold water. Boil it about two hours. The fluid thus obtained will be the pure nutriment of the meat, and its tonic effects are powerful. Physicians have considered it better than alcoholic stimulants in cases of extreme exhaustion, where there is a feverish tendency in the patient.

CLOTHING.—If you have a small dress-pattern, cut the three front breadths considerably shorter than the others. There is no economy in making the dress narrower than usual. A yoke waist generally requires less cloth than any other, as it uses up all the small pieces.

Always shrink dress-braids before using, by putting them first in scalding, and afterwards in cold water. Even after shrinking, care must be taken not to pucker the dress in binding it, but put the braid on "full."

To support the weight of the skirts, wear an under-waist of bleached muslin, with five large buttons sewed at intervals near the lower edge. The waist should be rather low in the neck. Button-holes should be worked in the skirt-bindings to correspond with the buttons. Persons who have worn this garment several years pronounce it indispensable.

The wrinkles in a cloth cloak or other cloth garments are removed by hanging it in a warm place.

The following method is a good one for knitting a double heel:—When the heel is set, knit one stitch, take off the next stitch on the needle without knitting it; knit the next stitch, and you will find a loop of yarn on the inside of the heel, between the two knit stitches. Repeat the process to the end of the row. Coming back on the inside, you will knit the stitches that were left before, and leave those that were knit before, remembering to *seam* the knit stitches. Continue thus to the end of the heel. The loops on the under side make the heel double, and increase the durability of the stocking to a great degree.

When the nails in the soles of shoes project upwards and become troublesome, they should be pounded down and the shoes be fitted with a pair of kid insoles, pasted in with strong paste.

To preserve the smoothness and beauty of a muff, always carry it so that the ends of the fur point outward from the person.

A strip of the glazed fabric known as argentine, is neater, lighter and more durable than the oiled-silk commonly used for lining bonnets.

TO PROLONG FLOWERING.—In order to prolong the flowering season in perpetual and other roses, and in annual and perennial plants, clip off with a pair of scissors the seed-vessels, as soon as the petals fall. This prevents the exhaustion of the plant in the forming of seed, continues its vigor, and preserves a neater appearance of the whole plant. At the same time, the use of the scissors will enable the gardener to impart a symmetrical form to the plants.

RURAL AND DOMESTIC ECONOMY.

WRITTEN FOR THE ANNUAL REGISTER BY S. EDWARDS TODD.

HOW TO KEEP GRASS FROM GROWING IN WALKS.—When the soil has not been excavated, where the walk is made, to the depth of ten or twelve inches, and the excavation is not filled with stone, gravel, old mortar and other substances, the grass roots on each side of such walks will frequently run into the soil in the walk, and send up shoots so numerous that the walk will be quite green.

Make a weak brine and sprinkle the walks, by means of a water sprinkler, as often as the grass appears. A few pounds of salt used in this way will save a vast amount of hard hoeing, and, at the same time, keep such walks clean and neat.

Where there are quack roots, Canada thistle roots, or roots of any other noxious plants, it will be quite as well to sow the salt along the walks as it would to use brine.

SUGGESTIONS ABOUT CONDUCTING WATER.—It frequently happens that it would be very convenient to carry water, in a conductor-pipe or trough, from a well, across the highway to a watering trough, or to a mortar-bed, six or eight rods distant from the well. There are two ways in which conductors may be arranged to carry it very conveniently.

One way is, to set up four posts around the well and make a platform on the top of them, four, six or twelve feet high, and set the pump on the top. Then the water can easily be carried ten rods, or more, distant from the well, in small open troughs or conductors, made by nailing two boards together like an eave-trough. The conductor may be supported by small posts set in the ground, and may be out of the reach of cattle.

Another way is to set the pump on a platform, a few inches higher than the trough where the water will be received, and conduct it in watertight pipe from the top of the platform down to the ground, and then, just below the surface of the ground to the place where it is to be discharged, when the pipe may be turned up so that the discharging end will be almost as high as the pump.

If the pump should be a forcing and lifting pump, one end of a pitman may be attached to the handle of the pump and the other end to a handle in a post, near the ground; then the pump could be worked without ascending the platform.

But if the pump were a chain pump, a small pulley with a groove in the periphery, may be put on the journal where the crank is, and a corresponding pulley on a journal set in a frame on the ground. Then a small chain belt, which may be obtained at most hardware stores for a few cents per foot, will drive the reel of the pump.

A wooden faucet, or a metallic one, such as are used in molasses barrels, may be inserted in the side of the pump-pipe or penstock, from which water may be drawn while the operator is standing on the ground. Such an arrangement of water fixtures will cost but little, and will sometimes save a great amount of labor.

To MAKE A PIN STAY IN A GARMENT.—Sometimes it seems almost impossible to make a pin stay in one's clothes; and this is especially true when a garment has been made stiff with starch, like a shirt collar.

When pins are new and straight they will work out very readily; but let them be bent a little and they will "stay put." Let valuable shawl pins and collar pins be bent a little, making them full of kinks, and they will seldom work out of a garment. I never could make a pin stay in my cravat but a short time until I practiced bending them a little after they were put in.

MUFFLING THE CRACKS OF A DOOR IN WINTER.—Dress out some wooden rods, about half an inch or more square, and cover them with strips of woolen cloth. Strips of list wound around these sticks will subserve a good purpose; now close the door and nail the strips on the door, not on the casing, as it is usually done, close in the corners, on the sides and at the bottom and top. A door can be made air-tight or wind-proof more perfectly by nailing the strips on the doors than to nail them on the casing, as it is usually done. When muffles are put on a door in this way a door will shut easily but very close and tight.

It would be a good improvement to fasten them on with small screws, as they could be more readily taken off in warm weather.

How to USE A BROOM SKILLFULLY.—But very few people know how to handle a broom properly, although many are accustomed to sweep more or less every day of their lives. There is science in handling a broom as well as in many other kinds of manual labor. You may laugh at me, gentle reader, right in the face, at such thoughts as these, but we will show you that few people know how to sweep correctly.

Always draw your broom, by leaning the handle a little forward. And why? Because that position of a broom will take the dirt along more gently; it will sweep cleaner; it will not wear out a carpet and the broom so fast, and not half so much dust will be raised to fly all over furniture in a room.

Most sweepers thrust their broom forward of them, with the handle inclining towards them; and this position breaks the broom very much more than if it were inclined in the opposite direction; it flirts the dirt up from the floor, thus raising more dust; and it wears out a carpet or the paint on a floor much more than if it were drawn gently along in a sliding position.

To TAKE A LOOSE CORK FROM A BOTTLE.—Bend a small wire in the form of the letter U, large enough to pass around the cork; then put the loop end of the wire into the bottle or jug, and turn it upside down, so the cork will

fall to the mouth of the jug, with the wire on each side of it and over the rear end, and it can be drawn out at once. The wire will be pressed into the sides of the cork as it is withdrawn. A small, strong cord will sometimes subserve the place of a wire.

When a bottle is full of any kind of fluid, so that the cork rises to the mouth, put in the wire and draw it up, and make it enter the hole straight, when it may be withdrawn.

STENCILING LETTERS ON PORTABLE ARTICLES.—Every one ought to have his name stenciled on his bags, umbrellas, buffalo robes, and all such articles that are liable to be lost easily.

Mark out the letters or figures on a straight piece of tin, or sheet lead or copper, and cut them through with sharp chisels by placing the tin on a smooth plank of hard wood. Prepare some thin paint, and lay the name on the article to be stencilled, and apply the paint by raising the brush up and down instead of drawing it back and forth.

The reason why names are blotted badly is because the paint is too thick or is put on too abundantly. There should be but a small quantity of paint in the brush in order to do it well, and the paint should be very thin.

To STOP LEAKAGE AROUND CHIMNEYS.—Remove the shingles and fit them again close to the sides of the chimney; then mingle a lot of coal-tar and sand together, making a stiff paste; spread it neatly all around the chimney on the roof and press it down hard, and the water will be effectually excluded.

This plastic material will adhere to both the brick and the shingles; and neither frost, rains nor dry weather will cause it to peel off.

How to CUT GLASS.—Let a pane or piece of glass be held between two pieces of soft wood board, planed smoothly and true, and hold it in a vise firmly; if the edges of the two boards are even with each other the glass may be broken off very true. The boards will prevent its cracking beyond their edges. Glass may sometimes be cut with a sharp corner of an old file almost as well as it can be cut with a diamond.

THE WAY TO PAINT WINDOW BLINDS.—There is a correct rule for painting window blinds, in order to do it neatly and quickly. In the first place, nail a strip of wood an inch or two in width across the end of a barrel; two barrels will make two benches for resting the blinds on. Place them just far enough apart so that the ends of the blinds will rest on the sticks on the ends of the barrels; lay the blind down flatly and paint along the inside of the stiles and the sides of the slats near the ends; turn the blind on one edge, and paint the *very ends* of the slats, and smooth off the inside of the stiles and bars; now paint the slats and the adjusting rod, and the last thing paint the stiles and bars.

When the paint on blinds is drying keep the slats open; and do not put so much paint into the sockets of the slats as to prevent their being folded

or adjusted easily. See directions for preparing paint and for painting, in ANNUAL REGISTER for 1864.



Fig. 1.—*A Putty Knife.*

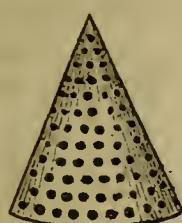
HOW TO MAKE A PUTTY KNIFE.—Take a piece of band iron about one-eighth of an inch thick and an inch and a half wide, and six or eight inches long,

and cut off the corners on one end, as shown by the accompanying figure, and punch a hole in the other end to hang it up by; now grind the corners smoothly and true, and grind it flat on one side and bevel it on the other side like a chisel. After grinding it, scour it bright on a whetstone of very fine grit, or with scouring brick, so that it will slip well on the putty; if the surface is coarse, rough or rusty, the putty will not slip on it, and putty cannot be spread well with it.

I have one of this kind which I made in a few minutes, and it is far superior to any other kind of putty knife that I ever met with.

VENTILATORS FOR GRAIN IN BINS.—Unless grain is very dry when it is stored in large bins, it is very liable to heat more or less and to become musty, which will injure it for market or for home consumption or for seed.

It is usually found to be very difficult to keep buckwheat in a bin during the warm weather of spring and summer, because it will heat and become mouldy.



In order to prevent grain from heating while it is in bins, saw a round hole about six inches in diameter in the bottom of the bin, and place a sheet iron ventilator, like the accompanying illustration, over the hole; then, by having small windows in the sides of the granary, there will be a complete circulation of air through the grain.

Fig. 2.—Sheet Iron Ventilator for grain bins. This kind of ventilators may be made of either tin or sheet iron, about eighteen inches long and six inches in diameter at the base, and made in the form of a cone, and the iron must be punched full of small holes, as in the engraving.

I have seen this kind of ventilators in use in the granary of Mr. W. A. J. OZMUN, South Lansing, Tompkins county, N. Y., and he assures me that they are a very useful contrivance.

In case a bin is a long one, the ventilators ought to be about four feet apart.

IMPROVEMENT IN VENTILATORS.—Let a hole be sawed through the floor in the bottom of the bin, about one foot square or more, and nail a piece of fine wire cloth over the hole. This will admit the air and hold the grain, and I cannot see why it will not be quite as good as the sheet iron ventilator just alluded to above.

VENTILATORS FOR INDIAN CORN CRIBS.—Unless Indian corn is very ripe and dry when it is husked and put in the crib, and unless the crib is quite narrow and airy, Indian corn in the ear is very liable to be damaged more or less by

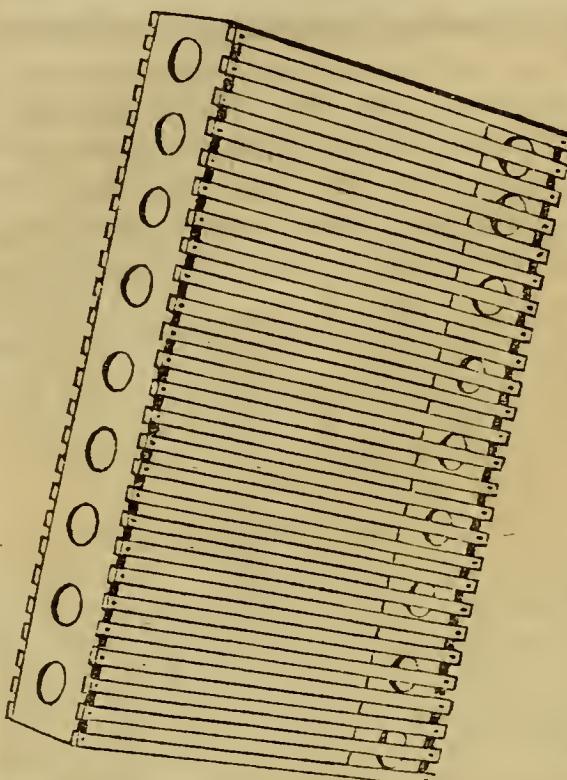


Fig. 3.—Ventilator for Indian Corn in the Crib.

feet long and three inches wide are nailed to them.

As soon as the crib is filled to the top of the ventilator, another one is placed on the top of it; in this way ventilators are added as the crib is filled with ears. The ventilators are not fastened to the floor, as the ears of corn will keep them in the place.

All the vapor from the piggery below, as well as from the middle of the crib, will rise through these flues and pass off into the atmosphere beneath the eaves of the building, as shown in the view of a combined piggery and corn-house, (p. 218,) which is a complete representation of the one now on the farm which I formerly owned in Tompkins county, which I built a short time previous to selling out there.

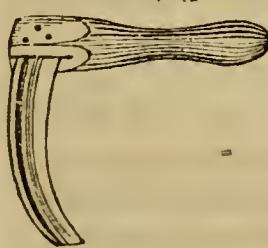


Fig. 4.

A GOOD AND CHEAP CORN CUTTER.—Take a piece of a good old scythe and rivet it firmly in a gain in the end of a handle, as represented in fig. 4; and if the piece of scythe is good stuff, and the edge thin, it will make an excellent corn cutter.

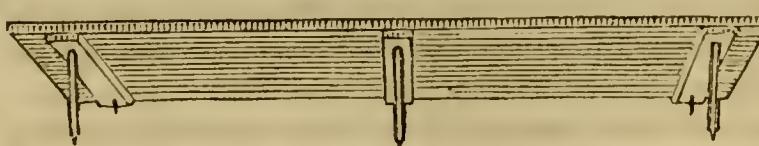


Fig. 5.—Portable Staging for a Roof.

on the roof of a building when one is painting the roof. It consists of a

heating; and when the cribs are made over the hog-sty or piggery the corn is very apt to be very much damaged by the aqueous vapor which rises from the pen beneath the corn, and which keeps it damp. Many good farmers contend that it is not at all practicable to keep Indian corn well in cribs over a piggery; but it can be done, as my own experience has fully proved.

The accompanying figure represents a ventilator that I was accustomed to use in my cribs when I was engaged in farming operations, which was placed lengthways of the crib over a long opening in the floor. It hardly needs any description. The end pieces are about six inches wide, three feet long, bored full of two-inch holes, and slats four

PORTRABLE STAGING FOR A ROOF.—The accompanying figure represents a portable staging to be placed

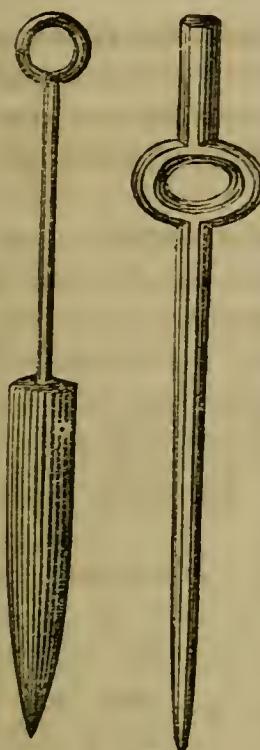


Fig. 6. Fig. 7.

Fig. 7 represents an eye bolt, which is very convenient and useful when framing gates, harrows or anything else which is made with a mortise and tenon. After the tenon is *draw-bored*, such a bolt is driven into the pin hole to draw the work up to a close joint preparatory to pinning it together. The eye is made in it for the purpose of turning it back and forth when getting it out of the hole.

plank with three cleats nailed across it, as shown in fig. 5, and legs with iron points in the ends of them to support one side of the plank, and an iron pointed spike passes through the other end of the cleat. The legs are made just long enough to hold the staging in a level position when it is on the roof. The pointed spikes keep it from sliding when a workman is on it.

A BURNING IRON AND AN EYE BOLT.—Fig. 6 represents a burning iron, with a handle welded to the end of a larger piece of iron. Every farmer should have several of them, made of various sizes. They may be round or square; they should be hammered smooth, and then they will burn a smooth hole. A harrow tooth welded on the end of a half-inch rod will make a good one for burning the holes in a harrow for the teeth.

Fig. 7 represents an eye bolt, which is very convenient and useful when framing gates, harrows or anything else which is made with a mortise and tenon. After the tenon is *draw-bored*, such a bolt is driven into the pin hole to draw the work up to a close joint preparatory to pinning it together. The eye is made in it for the purpose of turning it back and forth when getting it out of the hole.

A CHEAP PIGGERY AND CORN-HOUSE.

WRITTEN FOR THE ANNUAL REGISTER BY S. EDWARDS TODD.

The accompanying illustration of a farm building, (p. 218,) is designed for a small farm, where only a few hundred bushels of Indian corn are raised, and where only a few swine are kept.

It is fourteen feet wide at the base, and about sixteen feet wide at the plates, and twenty feet long, and eight feet to the top of the plate. The frame is built in the balloon style, except that the studs at the lower ends are mortised into the sills; inch boards, six inches wide and sixteen feet long, are nailed on the studs for joists, which makes the upper floor come just to the lower side or bottom of the door, in the gable end of the building, which is hung on hinges to open upwards. A door of slats is made in the end of each crib, as shown in the end of the building; and the ears of corn can be shoveled directly into the cribs from the wagon, on to the main floor, or into the attic window.

The doorway is about eight feet wide, and the cribs three feet wide on the

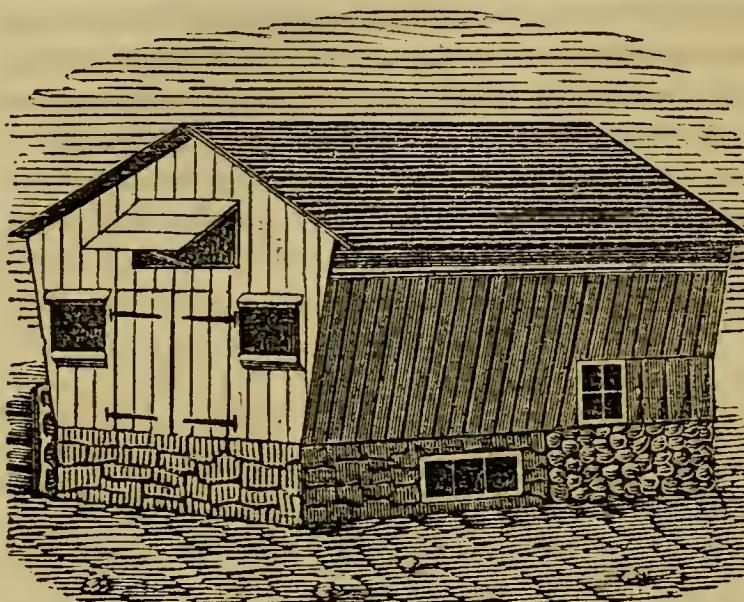


Fig. 1.—*A convenient and cheap piggery and corn-house for a small farm.*

bottom, and such ventilators as are described on page 216 were placed lengthways in the cribs.

The building was erected on a substantial stone wall, and in the rear of the building is a door to enter the feed room, which is six feet wide and fourteen feet long.

The apartment for the animals is about fourteen feet square, and the three-lighted

window in the wall opens into the apartment of the swine, and the four-lighted one into the feed room.

On the opposite side of the building is a window into the feed room, and a door where the animals enter their sleeping and feeding apartment.

The apartment of the swine is four feet high in the clear, while in the feed room it is six feet in the clear; and there is sufficient room for swill barrels, meal-box, and a small furnace for cooking food if desirable.

THE PARTITION AND TROUGH.—A trough, made of plank, ten inches wide and four inches deep—which is sufficiently deep for holding all the swill that will be fed at one time—extends entirely across the pen, between the feed-room and the swine's apartment. The partition is made of a *flap-door* or kind of board gate, hung on hinges, directly over the trough, to a sleeper or beam over head. The bottom of the flap can play from one side of the trough to the other, and a wooden button holds it at either place.

When feed is put into the trough, the flap is fastened to that side of the trough near the swine; then as soon as their feed is arranged in the trough the flap is drawn to the other side of it and secured with a button, when the swine all come up to the trough.

At one end of the flap there is a small door where one could enter the apartment of the swine from the feed-room. Directly over the trough is a small door about two feet square, through which grain can be obtained from the floor of the corn-house.

The floor of the corn-house is twenty feet long; but a portion of it, six feet long, which is over the feed-room, is two feet higher than the other part, which is about twelve feet long and eight feet wide, which affords ample room for assorting corn or for thrashing it with a machine.

A few loose slats are placed against the studs on the inside as the cribs are being filled, and when it is desirable to get ears out of the crib the slats at the bottom of the crib are slipped a little endways with a crowbar, and the corn will slide out as fast as it is shoveled away, and no faster.

ORCHARD MANAGEMENT.

PRODUCTIVE ORCHARD.—A correspondent of the **COUNTRY GENTLEMAN** states that **HENRY J. WIRT**, of Orleans county, N. Y., obtained from two acres of orchard 1,000 bushels of apples, in the year 1863. Of these he sold \$573 worth, put in his cellar 60 bushels of choice fruit, made 60 bushels into cider, dried 25 bushels and fed 30 bushels to his hogs. If the trees were two rods apart, or 40 to the acre, this crop would be an average of $12\frac{1}{2}$ bushels per tree.

MARKET APPLES.—The same correspondent makes the following remarks on this subject:

"The apples most in demand for market are the Roxbury Russet and the largest and fairest red apples, such as the Baldwin, Esopus Spitzenburg, &c., for winter, and the Detroit Red and Twenty-ounce apple for fall market. For red apples, the demand seems to be governed by large size and fine showy appearance, rather than by quality. For instance, the Baldwins are mostly grown here on young thrifty trees, or on those recently grafted, and the fruit, though very large and fair, is generally rather coarse, and not very high flavored, and few farmers think of putting them up for their own use; yet there are few, if any kinds, that sell better or are as profitable to raise. This is also true in regard to the Detroit and Twenty-ounce. Every farmer has apples that are as good or better to use, that will not bring half the price of these showy kinds; yet they sell the highest of any apples here, many having been sold for from \$2.50 to \$3 a barrel the past season.

"The Roxbury Russet is in large demand for long keeping, making it a very safe apple to deal in, and bringing it into the retail market in the spring and fore part of the summer, when apples are scarce and high. It is much sought for, and probably one of the, if not *the* most profitable of all the apples grown here. It is also said that the Russets from Orleans keep better than those grown in any other part of the country. Greenings are largely grown, but generally do not bring so high a price as the kinds mentioned. For though a far better apple, they often have to be sold for from twenty-five to fifty cents a barrel less than the Baldwins."

PROFITABLE CROP OF APPLES.—The Genesee Farmer states that an orchardist in Western New-York sold from his trees 11,000 barrels of apples, mostly Baldwins, and that the whole amount of the sales was probably about

\$15,000. If the trees averaged three barrels each, there must have been at least 100 acres of orchard, and there is no question that they received good attention and cultivation, and that the marketing was well managed.

SUCCESSFUL APPLE ORCHARD.—A Connecticut correspondent of the *Rural New Yorker* states that he planted 150 apple trees in the spring of 1859. The ground has been occupied with hoed crops ever since—now five years. These crops suffered no diminution at first from the trees, but they are now beginning to shade them. The average circumference of the trees, two feet from the ground, is over a foot, and the diameter of the heads is six to twelve feet. Each succeeding year has given three times as many apples as the preceding one, and nearly the same increase is expected for some years to come. This is certainly very good success, and shows the superiority of good cultivation over neglect. An interesting fact is stated worthy of notice by all who desire to purchase big trees, viz., most of the trees were three years of age when set out, but those which were older and larger are not now equal to them in size. So much for the check in growth given by the removal of the larger trees.

DRIED APPLES.—Wm. H. ROGERS of Williamson, Wayne county, N. Y., made 7,000 pounds of dried apples out of the crop of 1863, which he sold at ten cents per pound, making more money for that one article than is realized by many farmers for all their saleable products.

PEARS FOR FAMILY USE.—At the winter meeting of the Fruit Growers' Society at Rochester, twenty-one ballots were cast for the best fourteen varieties of pears for family use, with the following results, the figures designating the number of votes cast for each sort:

Bartlett	21	Belle Lucrative	16
Angonleme	18	Beurre Giffard	14
Louise Bonne	17	Beurre Anjou	14
Sheldon	17	Rostiezer	12
Lawrence	17	Flemish Beauty	12
Doyenne d'Ete	17	Winter Nelis	12
Seckel	16	Beurre Bosc	11

WINTER APPLES FOR MARKET.—At the same meeting the following votes were received for the six best varieties of market winter apples:

Rhode Island Greening	13	Northern Spy	6
Roxbury Russet	13	Golden Russett	7
Tompkins County King	13	Baldwin	14

RED ASTRACHAN APPLE.—A Massahusett correspondent of the *Genesee Farmer* says that by picking the Astrachan apples as soon as they get well colored, and placing them in a dry place, their propensity to rot is checked; they soon become mellow, and their acidity is so reduced that they are very agreeable in the hot season and never cloy the appetite.

PEARS FOR SANDY SOILS.—A cotemporary correctly mentions the Buffum and Flemish Beauty as well adapted to sandy soils. To these may be added Osband's Summer, Skinless, Beurre d'Amalis, Washington, Onondaga and Tyson.

LAYING OUT ORCHARDS.

Every one will admit that an orchard handsomely laid out in perfectly straight rows, is in every respect better than where the trees are in crooked lines. A cultivator can feel no pride in giving proper cultivation to an awkwardly planted orchard; and trees standing out of line will be a constant annoyance to every plowman who is in the practice of laying perfectly even furrows.

Some planters take great pains in setting their trees, so that one tree at the end of the row will hide all the rest when the eye ranges through the line. But in securing this desirable object, a great deal of labor is often expended in sighting in different directions while setting each successive tree, so that every row may be straight every way. The following mode of laying out and planting will not require one-twentieth of the labor commonly devoted, may be performed under the direction of any common workman, and will give rows that will range perfectly, not only in both directions, but diagonally. The writer has found that two men would thus lay out from thirty to forty acres in a day, with perfect precision for planting.

The first thing to do is to procure as many short pins or stakes, a few inches long, as there are to be trees in the orchard. These may be made by simply splitting short blocks or boards with an axe, say half an inch in diameter. Then procure a strong cord as long as one side of the orchard, or, if the orchard is very large, as long as each section may be, if necessary to divide it. Then, with a pole or other measure, mark off the distances of the trees on this line, sticking a common brass pin through at each place for a tree, bending it around the cord so that it will not come out. Red yarn sewed through and tied around the cord would be more visible than pins; but the latter are quickly found if the workman measures the distance by pacing between them as he walks from one to the other. A new cord will stretch a little at first, but will soon cease to do so. The easiest way to mark the spaces on the cord is to wrap it lengthwise around a board cut at the right length, so that every third coil shall be a place for the pin. Thus, if the board is five feet long, by marking every third coil at the end of the board we obtain spaces of thirty feet. The field having been plowed and fitted for planting, we are now ready for operation. Select a still day, so that the wind will not blow the cord out of place, and then stretch the line along one side of the field, at a suitable distance from the fence where the first row is to be. Make it as straight as possible, by drawing on it forcibly; a stout cord being better than a feeble one on this account. If the land be tolerably level, and a strong cord be selected, thirty or forty rods may be measured off at a time. Place flat stones or other heavy weights upon it at intervals, to keep it in position; if there is some wind, some care will be

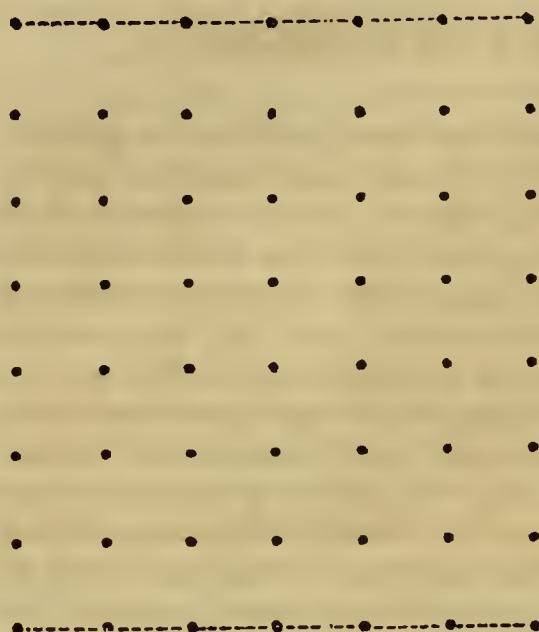


Fig. 1.

necessary in making it perfectly straight before thus fixing it. Next, drive in one of the short pegs or sticks at each point marked by the pin already described. When this is done, one row will be marked. Then remove the line, and mark each end of the field at right angles to this in the same way. Lastly, mark the remaining side. Before marking both ends, it is safest to stretch the line on the fourth side, that all may be accurately spaced. Next, to fill up this hollow square with the proper marks, stretch the line

successively between corresponding sticks on the opposite sides, and mark as before till the whole is completed. If the work has been carefully done, every stake will range perfectly. Every cord will stretch more or less, but if stretched so that the ends shall come out even each time, which is attended with no difficulty, the rows will be perfect, as shown in fig. 1.

Next take a strip of board, say about eight feet long and six inches wide, as shown in fig. 2, and cut a notch in one side at the middle, just large enough

to let in the stem of a tree. Bore a hole through each end, exactly at equal distances from this notch. Then, when-



Fig. 2.

ever a tree is to be planted, place the middle notch around the peg, and thrust two other pegs through the holes at the ends. Then take up the board, leaving these two pegs, dig the hole, replace the board, and set the



Fig. 3.

tree in the notch. Proceed in this way till the whole orchard is planted. It is obvious that the trees will stand precisely where the first pegs were placed, and will range in perfect rows. A large number or series of the two pins may be set successively by the board, so

that a number of workmen may be digging and planting at the same time. It is of no importance in what direction the board is placed, as the pin and the tree will occupy the same spot as shown in fig. 3, the row extending from *a* to *b*.

PACKING APPLES IN BARRELS.

Where fruit is sold by the quantity, barrels are always best for packing, as well for cheapness and strength as for the ease with which they may be moved without jolting. Apples will keep best if exposed in heaps two or three weeks to open air before barreling—as some of the exterior moisture escapes, and they become less liable to decay. The few minutes additional time required to deposit them carefully and without dropping them into the barrels, will be many times repaid by the fine condition in which the consumer finds them. There should always be at least two barrels placed side by side when filling; one should be marked "extra," and as the assorting proceeds should receive none but the finest specimens; the other only such as are decidedly good; all the rest, including those that are bruised, scabby or marked with insects, should be rejected for distant market, and used only for home purposes, such as stewing, converting into cider, or feeding to domestic animals. In well managed orchards, where pruning or thinning the branches, thinning the fruit, and proper cultivation have been attended to, this third or inferior portion will constitute but a very small part; in other orchards, grown up with suckers, weeds and grass, and with tops consisting of brush and stunted branches, the labor of selection will be small, for the whole crop will be of this third portion.

Apples should be so snugly placed in the barrels that there can be no rattling when they are moved. They should, therefore, be slightly shaken several times while filling. A little practice will enable any one to do this sufficiently without danger of bruising. The upper stratum should be made as straight and uniform as practicable, and at such a height that the head of the barrel will slightly indent them—the dry wood absorbing the moisture and preventing decay.

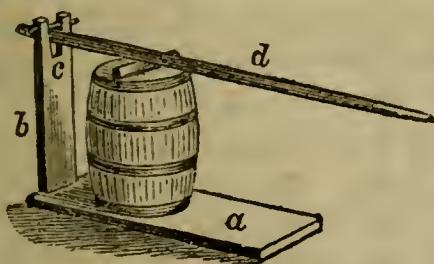


Fig. 1.

A simple contrivance is adopted by packers for placing the head in position, and is shown in the annexed sketch. It consists of a plank, *a*, on which the barrel stands, into one end of which is dovetailed an upright piece of plank, *b*, a little higher than the top of the barrel. A slot, *c*, is cut in its upper end, and a pin runs across to receive the end of the lever, *d*,

which may be six or eight feet long. A round board is used as a follower, to be placed upon the head; and across this board is placed a cylindrical piece of wood about three inches in diameter, (and flat on the lower side,) on which the lever is placed. A moderate pressure at the end of the lever, and a little practice in its use, will enable the operator to bring the head to its position with great ease, precision and accuracy.

TRAINING GRAPES TO LAY DOWN IN WINTER.

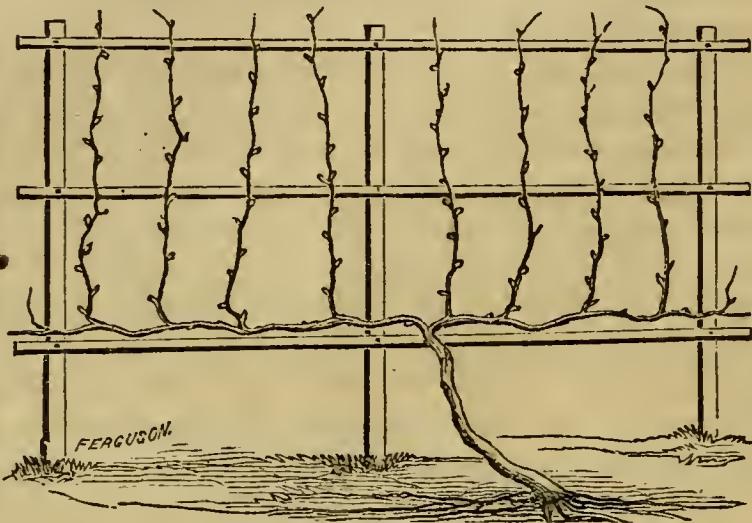


Fig. 1.

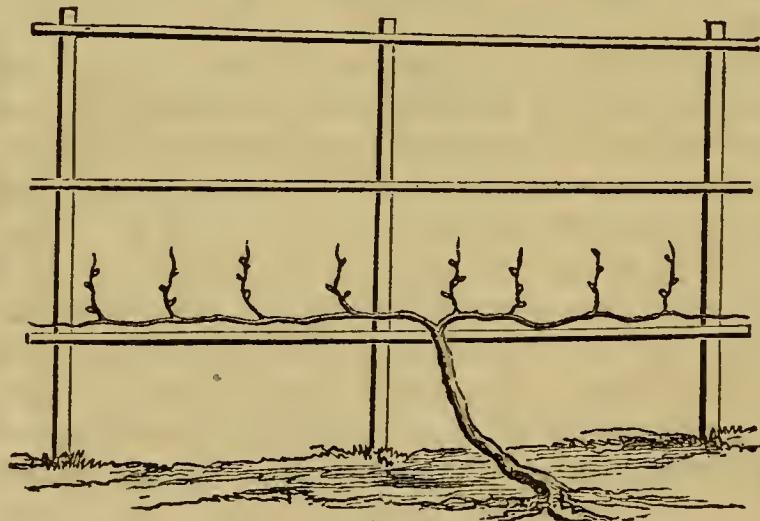


Fig. 2.

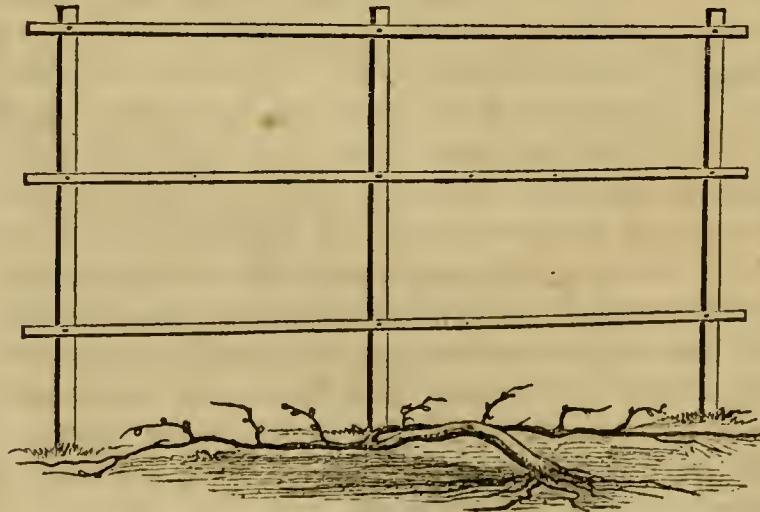


Fig. 3.

S. WORDEN, of Oswego county, N. Y., gives his plan, (in the COUNTRY GENTLEMAN,) as follows:

The winters are growing so very cold, it has become necessary to lay down our grapevines in order to secure a crop. I will give you my plan to get more sun fore and after part of the day. My trellis runs east and west. I set my vines about 18 inches back of the trellis—the vine is brought under and tied to the lower slat; this brings it about a quarter pitch. By so doing they can be laid down and raised up when very large, without injury. They must be trained with "arms" and upright canes, fig. 1. Fig. 2 represents the vine pruned to lay down. Fig. 3 represents the vine laid down to cover for winter. You will see the vine lays flat on the ground. The work can be easily done. Light dry soil, muck, leaves or old rotten manure,

is good. If covered with wet, heavy soil, it soaks and injures the buds. By covering in winter they will ripen one week earlier, which is of much importance as far north as Oswego.

WANT OF CALCULATION.

A cotemporary states that a large farmer at the West, sold last fall, twenty tons of hay at six dollars per ton; and again, in January, twenty tons more at ten dollars per ton, and thought that he was making his fortune. In the spring, however, he was compelled to go long distances to buy hay at twenty dollars a ton, giving his note, to save his stock from starvation.

Such occurrences as this show the common want of calculation among farmers in providing winter food for their stock. Every man who has kept cattle and horses as long as three years, ought to know the average amount they will consume per head each winter. The amount will, of course, vary with the season—a long and cold winter requiring more than a mild one. If the animals are exposed to the weather and wintery winds, the difference will be very considerable, say twenty-five or thirty per cent; if they are well sheltered it will be quite small, say not more than ten per cent. The farmer must make his calculations accordingly, and be sure to have enough for any contingency, for it will not be profitable for him to keep them well through three-fourths of the winter, and then starve them to death at last. The amount required per head will also vary with the latitude, as well as with the size of the animals, and the general economy in management. Perhaps it may be taken as an average in the Northern States, that a horse will consume three tons of good hay, and a cow two tons, where good care is given, and a moderate amount of roots, meal and other food. It is important that farmers should inform themselves well on this point, in doing which, approximate results may be easily obtained, by occasionally weighing the food given them during a week.

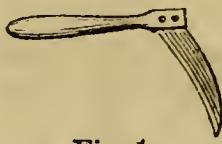
Every farmer should know the amount of hay he has secured during the summer. A weighing scale for this purpose (which may be also used for weighing fattening animals,) would soon pay for itself, by enabling the owner to determine his whereabouts accurately; but, in the absence of such a scale, the occasional weighing of a load will soon enable him to guess the amount not very far from the mark. Every load drawn into the barn or stack should be entered in his memorandum book, and he will thus be enabled to know, with tolerable accuracy, how much he has on hand, and how many animals it will safely carry through the winter. He can then lessen or increase his stock accordingly in good season, without waiting till he has reached the last extremity.

Those who have kept no such account may nearly determine the amount on hand by measuring. Hay, cut early, when the stalks are soft and flexible, will settle closer than such as is cut when nearly ripe, or when the stalks are stiff and dry. But, as an average, good timothy hay in a mow or stack, will yield a ton for every five hundred cubic feet—the top, of course, will be lighter, and the bottom heavier, but this will be the average. Clover hay will be nearly one-half lighter, that is it will require some seven hundred feet to the ton. A little practice in this way, with hay which he has weighed, will enable the farmer to judge nearly the amount of hay he has stored. And this knowledge, applied as already stated, will not only enable him to meet his calculations with accuracy and economy, but will save him from much uneasiness and anxiety occasioned by the fear of starving his animals.

TRIMMING HEDGES.

There has been some discussion, of late years, on the expense and best mode of trimming Osage Orange Hedges, and some have regarded it a formidable item of expense. We have made some experiments and observations on this subject, and give our readers the following results:

Trimming with a stiff scythe is a rapid mode, but as the operator has to strike upwards in order to do the work smoothly, and to prevent breaking and splitting the branches, it is hard and severe work on the wrist. In most of the experiments alluded to, a common corn-cutter has been employed,



which has a wooden handle about a foot and a half long, in which a steel blade is set obliquely and about twelve inches long, (fig. 1.) With this simple instrument one man has

Fig. 1. trimmed one-half to three-fourths of a mile of four-year hedge on both sides in a day—cutting it to a peak in the middle, like the roof of a house. A great improvement would be made in this tool by making the handle three and a half feet long, and setting the blade more nearly in a line with it, as shown in fig. 2. The blade of an old scythe, cut short,



Fig. 2.

might be worked over by a blacksmith, so as to answer the purpose well. This length of handle enables the operator to strike more efficient blows, and keep his hands clear of the thorns. The workman we have employed

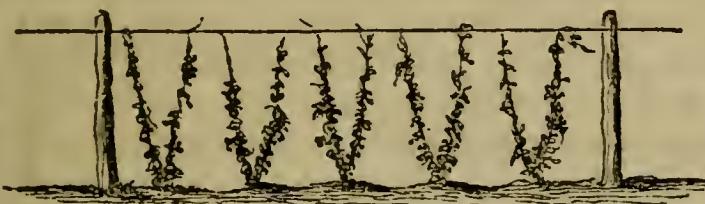
is satisfied he could easily trim a mile or more in a day with such a tool. When the hedge becomes older and higher, the labor probably would be somewhat increased; but two annual trimmings would not probably cost more than one cent a rod.

TRAINING LIMA BEANS.

H. P. B. gives the following directions:—"I set two rows of posts four feet apart, and eight or ten feet apart in the rows; the posts six feet high above ground. These may be made of good chestnut rails, hewed to three inches square at the top. Twelve inches above the ground along the line of these posts, I nail a strip three inches wide, and another at the top of the posts, of less width. Across, on the top of the posts, is nailed another strip to keep the posts firm; another strip forms a ridge-pole, supported by small rafters, set at an angle of forty-five degrees, from the top of the posts. To the lower strips is tied cord, sixteen inches apart; each cord is taken around the upper slat, and over the ridge, and secured on the opposite side in the same manner. It is designed to have but one plant to a cord. In this method of planting, more plants can stand on the same ground, and still so divided as to be open to the air and light, and the result is a product nearly or quite double that which can be grown upon poles. If the frame is well set up it will last many years. It may be so made that it can be removed to different locations. When the posts are set on each side of a garden walk, a very neat, shady avenue is formed, with economy of room. This plan is not confined to Lima beans, but it is equally adapted to all the running varieties."

W. A. UNDERHILL, of Croton Point, North river, has adopted a mode of training the Lima bean, which is exhibited in the accompanying figure, and

which he thinks possesses some important advantages over the common mode of training on poles. A strong wire is stretched from the tops of posts



placed at a distance from each other; and to this wire two diverging cords from each hill of beans are attached. This mode gives more complete exposure to air and sun, affords larger crops, and has a neater and more finished appearance than the usual way of training.

GARDEN WALKS.—There is no part of gardens or pleasure grounds more expressive of the character of the keeping than the walks. No matter how fine the flower beds may be, if the walks are not bounded by smooth and graceful curves, or if they are rough, irregular and unfinished, the grounds will convey unmistakably an expression of bad management. But a smooth and perfect walk on the other hand, even if carried through a wild natural shrubbery, imparts a finished air to the whole. These facts should be borne in mind by all owners of ornamental gardens.

NEAT PREMISES.

A great difference may be observed in good farmers, so far as keeping their premises in neat and finished order is concerned. With some, no weeds, briars or bushes are seen along fences, no gates off their hinges, and no tools out of place or exposed to the weather. Others, successful in most particulars, are careless in these and similar respects. This is doubtless partly owing to the force of habit, partly from a slovenly mind, and partly by undertaking more than they can well accomplish. As a general rule, the neat farmer is the most successful one--this we have observed in a large number of instances, and the exception is probably not one in twenty. The reason of this is that the man of order and energy, qualities required for the best success, carries out his ideas of order in all their details, and does not do a smart thing in one place and a stupid thing in another.

It, however, sometimes happens that order and neatness are neglected because everything is not thought of at the right time. To obviate this difficulty, every owner or manager of a farm should carry a small memorandum book in his left pantaloons pocket, where it will always be at hand whether he throws his coat off or not. Wherever he passes he will, of course, have both eyes open, and everything which he sees out of order or requiring attention, which he cannot instantly rectify, he should at once enter in his book--such, for instance, as a broken gate, latch, a board knocked off the fence, a harrow left in the field, a batch of thistles left uncut, a burdock and a bunch of elders growing in a corner of the fence, a wagon with a defective linch-pin, a weakened strap in his harness, and a hundred other matters of a similar character. The first day that can be spared either by himself or one of his best workmen, should be devoted to putting these things all in order with the memorandum book or a copy of it before him, where everything is crossed out as fast as they are completed.

By adopting this course as a regular system, the whole premises would soon be found to have assumed a neat and satisfactory appearance, and, as a matter of economy, no labor will probably be so well expended.

HEDGES FOR THE SHADE.—A friend inquires what the best hedge plants are to grow in the shade of trees. Nothing is better than the hemlock or the Norway spruce. Any one can readily determine before hand what plants will succeed best, by examining the interior of thickly growing bushes. If, on turning up the branches, the leaves are found dense and healthy inside, such trees will grow well in the shade; but if the inside leaves are dead, or the shoots bare of foliage, they will not succeed. A buckthorn hedge, for example, is found to have all the leaves outside, and none at all toward the centre; as a necessary consequence, the buckthorn is one of the worst of all hedges under the shade of trees.

POULTRY KEEPING AND RAISING.

The following plan of a Poultry House was furnished for the COUNTRY GENTLEMAN by Mr. C. E. SANDS of Dutchess county:

The first and most important step in the successful raising of poultry, is the situation and building of their abode, and there are four principles to be borne

in mind in the erection
—light, warmth, ventilation and cleanliness—and in order to illustrate these requisites the more fully, it is proposed in the present article to give merely the plans of the henry on the writer's premises, reserving for some future time the most preferable breeds,

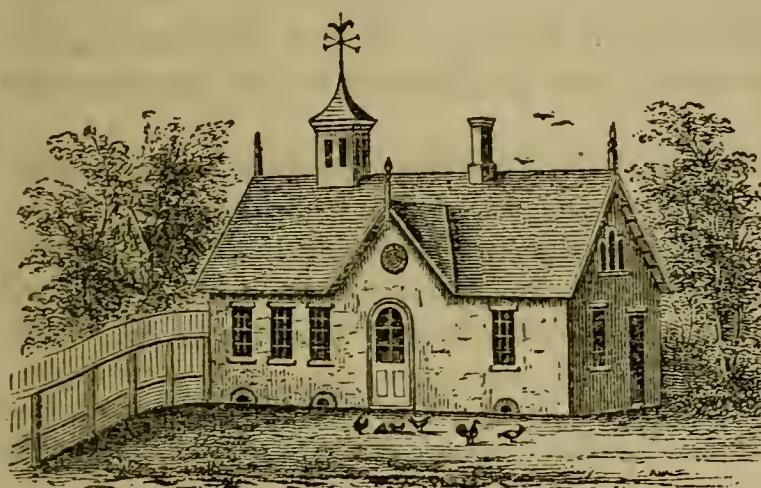


FIG. 1.—*Poultry House.*

mode of feeding, rearing of young, &c.

Entire originality cannot be claimed in the construction of the house, but the plans are the result of observation and ideas suggested in your paper from time to time, and although somewhat resembling the external appearance of

fig. 23, page 74, vol. 3 of the ANNUAL REGISTER OF RURAL AFFAIRS, I cannot yield to it the palm of the model poultry house.

A spot as convenient as possible to my dwelling was selected as a site for the building, for the nearer the poultry house is to the habitation of man, the fewer will be the attacks of birds of prey or any destructive animals. The foundation was

dug in a side-hill, with the north and west walls banked up to within two feet of the eaves, leaving the south and east fronts entirely open. This was done in order to break the cold wintery winds.

The building is of brick, 36 feet by 20 feet inside, the walls being 8 inches thick, 9 feet high. There are windows in each gable; also three windows 5 feet by 3 feet, separated by brick piers, in the roosting apartment; two windows in the laying room and also the door in the south front is half sash,

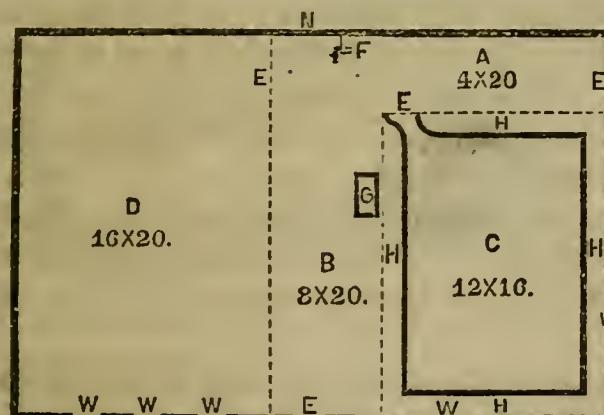


FIG. 2—*Ground Plan.*

affording an abundance of light and air. There is also a ventilator in the roof over the roosting apartment, with a strap so arranged that by means of a cord and pully it can be raised or lowered at pleasure. There are two doors, one on the south, opening into the yard; the other on the east side, and as an entrance into the building. Three openings for the fowls—two into the roosting room, and one opening into the laying room, complete the exterior of the building.

There is a cistern 5 feet square on the north side, that discharges itself by means of a faucet in the building, thereby dispensing with the necessity of a pump.

The interior will be more readily understood by a glance at the ground plan.

A., passage way; B., room for preparing warm food in the winter; C., nest room; D., roosting room, with the usual ladder-like perches; E., doors; F., cistern faucet; G., chimney, into which is inserted the pipe of a small farmers' boiler, holding about 15 gallons; H., shelves for nest boxes; W., windows.

The walls inside are plastered and finished with lime and white sand, thus adding to the warmth of the building, and presenting a smooth surface for whitewashing.

The floor was first paved with brickbats, and grouted, and then floated off with a thick coat of cement, rendering it entirely rat-proof, and easy to remove the droppings. The floor above extends over the rooms C. and B., and is about 20 feet square, and is used for feed bins, (of which there are three,) and for storing coops, nest-boxes, &c., when not in use. The loft is gained by means of a ladder through a trap-door over the room B., thus doing away with the necessity of a stairway; the ladder when in disuse may be hung on hooks screwed into the partition.

The grain is hauled up by means of a tackle, and discharged below through shoots as required.

The partitions between the different apartments are made of slats, 1 inch thick, $2\frac{1}{2}$ inches wide, and set 3 inches apart. This arrangement allows a free circulation of air, and also the heat from the stove in winter, to equalize the temperature.

The last, though not the least requisite, is the proper arrangement of the nest-boxes. Upon this part of the establishment I have paid more attention than to any other, and after trials of many of the plans advocated have adopted the present one. There are two shelves running each side of the room, the first about 12 inches from the floor, and the other about 18 inches above it; the shelves rest upon brackets which project about 5 inches beyond the shelves, upon which is fastened a bar for the hens to hop up on before going into the nests.

The boxes are made of siding 16 inches by 14 inches, planed inside and out, without any bottom, the shelf forming a bottom, thus rendering it easy

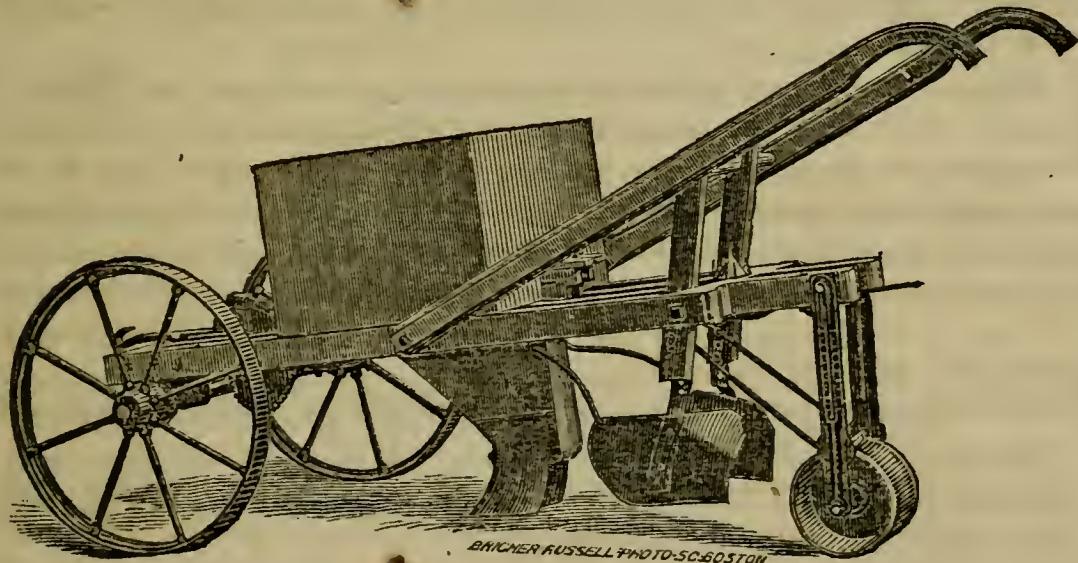
to cleanse after three weeks' occupation. In order to give an idea of security to the nests, I have nailed laths between the shelves and fastened small hemlock branches between them.

There is a yard attached to the building, 36 by 80 feet, boarded close from the ground about 3 feet, in order to keep off cold winds. There is also in it a shed about 75 feet long, and 6 feet in height, under which the fowls congregate in stormy weather.

TRUE'S POTATO PLANTER.

S. E. Todd, who has superintended the trial of a working model of this machine, gives the following account of its working :

It performs the labor of making its own mark or furrow for receiving the potatoes ; cutting them ; dropping them ; covering them, and rolling them, all at one operation, in an excellent and farmer-like manner.



The accompanying illustration will furnish a correct idea of this implement. One horse will work it with great ease. Two drive wheels in front support the machine and work the cutting and dropping apparatus, and cause the implement to run very steadily. Any boy who is strong enough to handle a cultivator, can work this implement without any difficulty.

The potatoes are put into the hopper, and enough for a hill is cut and dropped with great accuracy, and covered as well as the labor could be done by hand, and as fast as a horse can walk.

In addition to these things, the machine is neatly and substantially made, and must prove a great labor-saving implement in those localities where large crops of potatoes are raised either for market or for home consumption.

SUPPORTS FOR LIGHTNING RODS.

Former numbers of the REGISTER have given full directions for erecting lightning rods. But frequent inquiry is made for particular directions how to fasten them to the building.

Wooden supports are far better than anything else, for several reasons.

They are cheaper, more easily secured, will not direct the fluid into the building, as iron, and may be made longer, so as to keep the rod farther from the building. The upper support on a chimney may be a light, square wooden frame, *a*, fig. 1, nailed together, and accurately fitting the chimney outside, one of the rods forming the frame projecting a foot, through which a hole is bored to receive the rod. A carpenter will make such a frame in half an hour. At the *a* foot of the chimney a piece of plank, with a hole through the upper edge, as shown in fig. 2, is nailed on the roof, so as to keep the rod about six inches from it. One or more like this may be placed between the chimney and the eaves, to keep the rod above the roof. At the eaves a very simple fastening

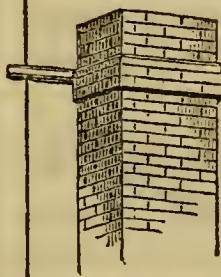
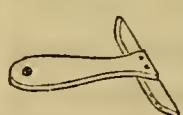


FIG. 1. is made, consisting merely of a piece of board with a hole through the outer end, nailed on the roof, or still better beneath the eaves, and projecting a few inches. Should any support at the side of the building be required, it may be made as shown in fig. 3.



Any blacksmith can make the rod, by simply welding rods together, when it may be easily dragged home behind a wagon; and a carpenter, or even any common farmer of ordinary ingenuity, will make the supports. If the upper end has several points, the lower end of the rod should be first passed through the supports before they are fastened to the building.

Copper is a better conductor than iron, in about the same ratio as its increased cost—iron is best and stiffest on the whole, except beneath the earth, where copper is better by not corroding away. Several points, by dividing the discharge, should there ever be any, would be less liable to melt, as has sometimes happened with a single point. Iron points, ground sharp like a needle, and polished, will remain sharp for ages, for no water to corrode can remain upon them. Or they may be tipped with copper.

A common cause of failure is the shallow depth of the rod at bottom. It should never be less than 5 or 6 feet into the earth, and should have a bushel of charcoal there to dissipate the fluid.

RAISING YOUNG TIMBER.

The rapid and almost entire disappearance of the original forests of the several States, and the great increase in the price of timber, indicate the importance to every considerable land-owner, of allotting a portion of his farm to the growth of new timber. The following rules should be observed:

1. Where old woods are cut down the new growth will spring up the best by making a thorough clearing as far as any of the trees are cut.
2. The young and dense growth which now springs up will afford much more and better timber by being properly thinned out and trimmed every few years—the part thus cut out proving a valuable crop each time.
3. Different rules have been given as to the distances of thinning; but the more common opinion is that young trees should not be allowed to stand nearer together than one-third of their height. The thriftiest and straightest trees should always be left, and the distances asunder be nearly uniform. The superiority of timber-land thus treated, both in the amount and quality of the timber, over such as is entirely neglected, would be surprising to any who had never before witnessed it.
4. The most profitable period or age for cutting, as indicated by ample experience, is about twenty years; a less average yearly return will be obtained if shorter or longer periods are selected. Well managed timber land on medium soils will produce at this age about 20 cords per acre, or one cord per acre annually. A farmer therefore may obtain a supply of fuel equal to 20 cords yearly from 20 acres of woodland; or an equal amount of more valuable timber.
5. A larger amount and more valuable returns might be obtained from land specially planted in the first instance with the most valuable kinds of trees. They might be planted in the first place on cultivated soil, in alternating or occasional rows with corn, or other drilled crops. The cultivation given would cause a rapid growth while the trees are young; the thinning might be more systematically and perfectly performed; wagons could pass with perfect facility for drawing off the timber between the straight rows; and the rows, when once established, would remain perpetually, the trees sprouting up from the stumps at each cutting.

HARVESTING Roots.—In harvesting Turnips, Carrots, &c., a great deal of time may be saved by cutting off the tops before they are removed from the soil, by means of a small, light hoe, ground as sharp as a knife. Turnips are most quickly removed by a two-pronged tool in form of a hoe, placed under them. If Carrots have been planted in straight drills, plowing a deep, even furrow close to and away from the row, will facilitate the work.

LAYING TILE IN DRAINS.

There are three kinds of material forming the bottom of drains, requiring different treatment in selecting and laying the tile. The first, where the bottom is slaty or smooth rock, the horse-shoe tile, without any shoe, may be used freely and safely, as it can never sink or become choked. In hardpan or compact earth the horse-shoe may settle in the lapse of years, and hence is objectionable. The bottom of such drains should be cut and smoothed off with a round scoop, so as nearly to fit the tubular tile to be laid in it. If the soil is quite hard, and rather clayey, a little straw is all the covering that is necessary before throwing in the earth. If softer and more sandy, a small flat stone, or two inclined flat stones, should be laid on each joint. These will not only serve as a covering, but will tend to prevent the pieces from settling out of line. Broken fragments of larger tile, by fitting more accurately, are better than flat stones. If the soil be quite sandy, and especially of the nature of quicksand, it will be absolutely necessary to procure short tubular collars, into which the two joining ends of the pipe tile may be thrust. These collars will not only serve as a cover, but form a perfect security against any displacement by settling.

TYING MATERIALS FOR FARMERS.

There are two materials used for the various purposes of binding and tying which every farmer should be supplied with. One of these used for gardening purposes, tying up trees and plants, ligatures for budding, &c., is the prepared basswood bark. This is very easily manufactured, and may be procured in abundance wherever basswood is used for timber or saw logs. Remove the bark when it will peel freely, and place it under water immediately, before it dries any whatever. A moderately running stream is best, as it carries off the foul odor otherwise arising. It is best to place it in masses or beds, and sink it by means of stones. In ten days or so the inner or smooth bark will peel off handsomely in stout ribbons, and should be hung up to dry. The remaining bark may be sunk again, and in a fortnight will afford another and coarser peeling.

The other material, valuable for binding cornstalks, corn shocks, thrashed straw, and other purposes where strength is needed, is the ozier, such as nursery-men employ for packing trees. There are different oziers, some too brittle for this purpose—the stronger sort, *Salix purpurea*, is nearly as stout and flexible as hemp cords, and as much will grow on a square rod for binding purposes as may be obtained from an acre of rye straw. It should be cut down every spring to the ground, and the young shoots which numerously spring up constitute the tying material.

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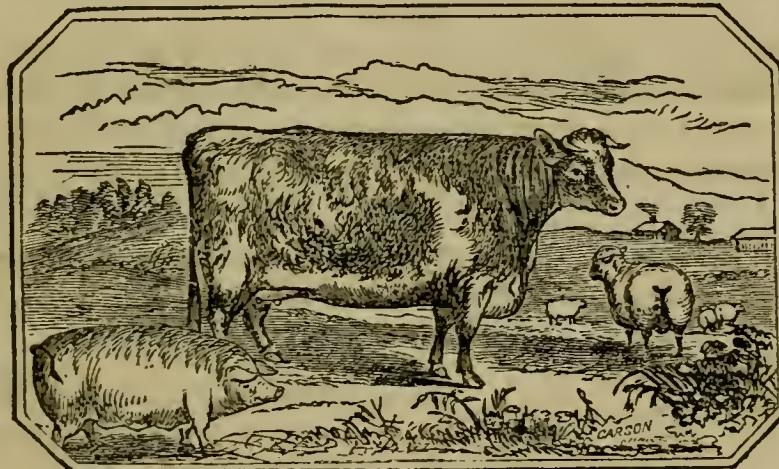
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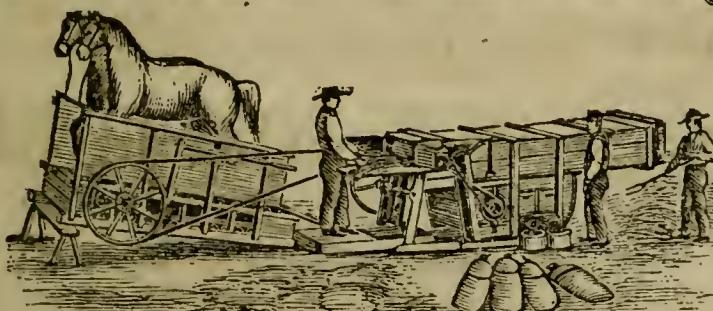
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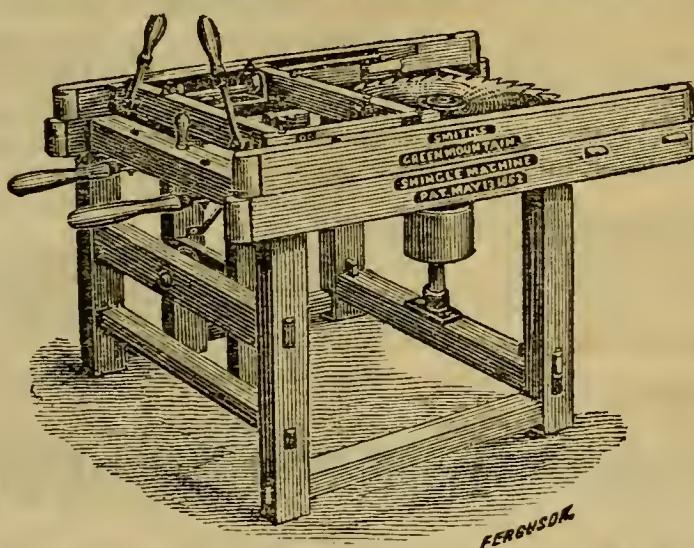
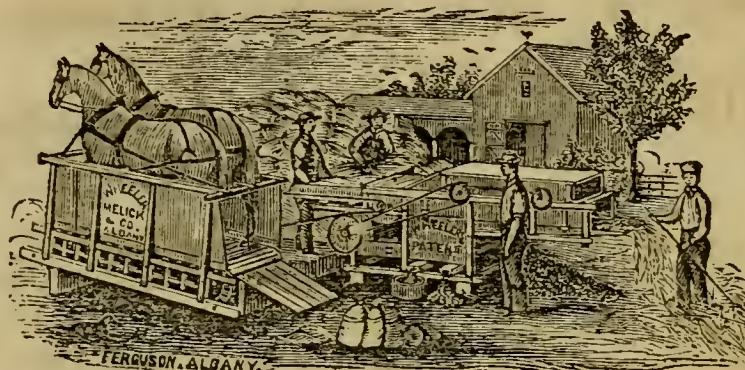
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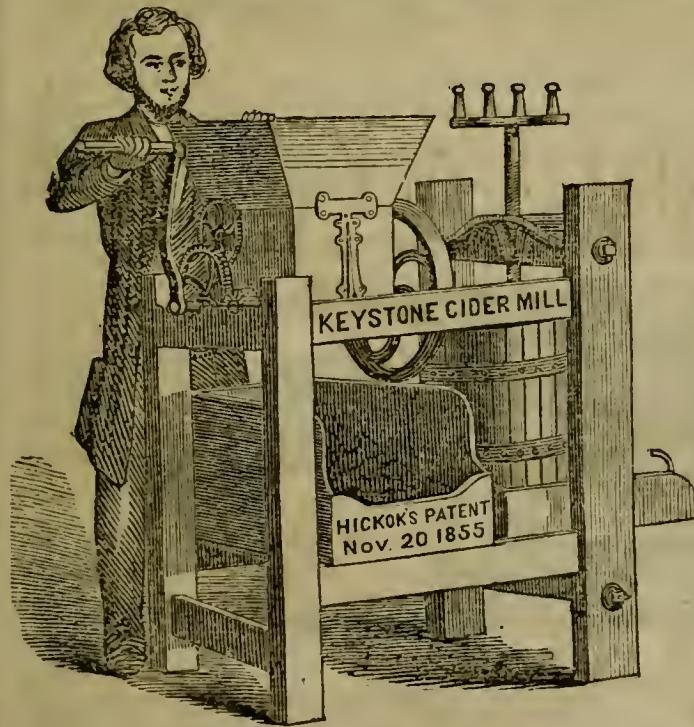
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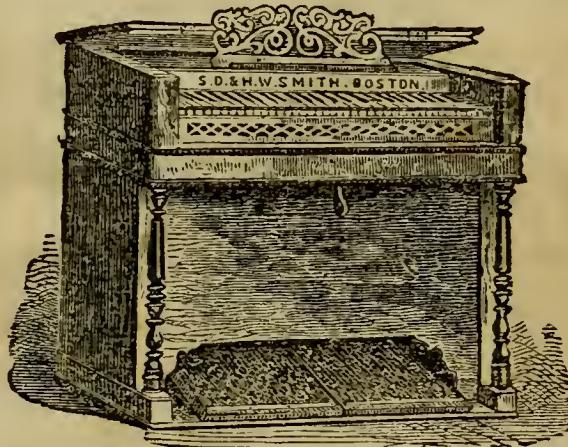


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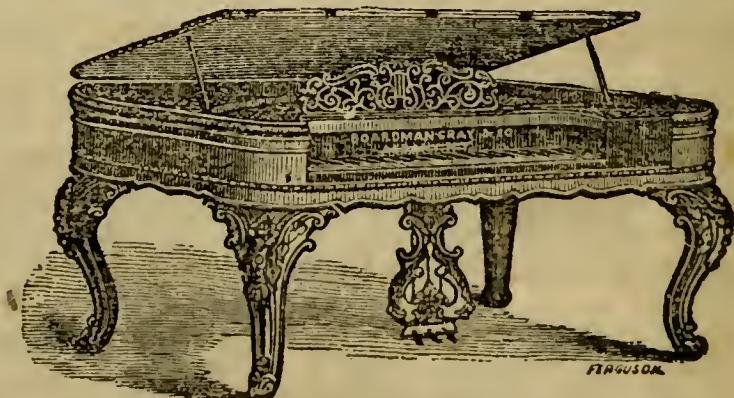
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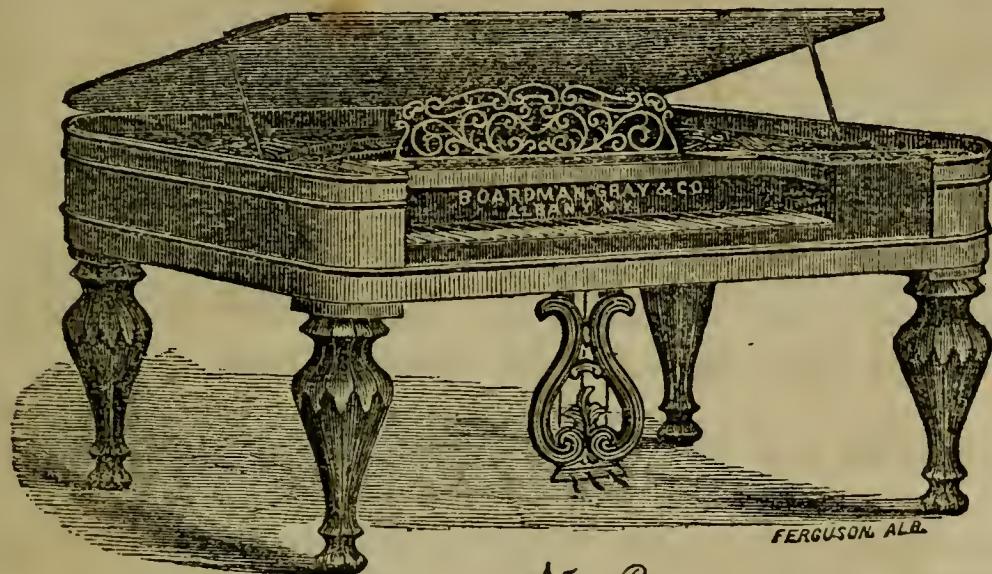
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